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Cities Old and New—II

The Urban Galaxy of the Hellenistic Age

I

OF THE many monarchic city foundations recorded by history none seem so fascinating today as those of the Græco-Oriental world in the Hellenistic Age. The development which these foundations represent was so extensive and magnificent that its result may well be likened to the appearance of a firmament, enriched of a sudden with a great number of new stars, some of them amazing in their magnitude and splendor. As though by enchantment great centres of commerce arose in places which theretofore, perhaps, had been the site of some insignificant inland or seaboard town, rarely mentioned and infrequently visited by travellers. Foremost among these trade centres of magic rise were Alexandria in Egypt, Antioch in Syria, and Seleucia in Babylonia, which cities, although distant from one another, laid claim, by virtue of their size and brilliance, to being considered as a transcendent constellation.

These urban upstarts grew so rapidly that their population, in all probability, numbered hundreds of thousands within a century of their foundation. Simultaneously the seeds of urban planting were laid down in many places with such good results that not even the most optimistic city founder had any reason for being disappointed. The average Greek or Macedonian of that period probably swelled with pride at the thought of this spectacular urbanization in which a great and expansive force became manifest. For did not Greek commerce and industry flourish as never before in many of the new cities? Was not the harbor of Alexandria more crowded with ships and bustling with life than the harbor had ever been in the history of the world? Did not Greek merchants travel for business as far as Persia; nay, even to India, and did not the merchant fleets of Ptolemæan Egypt sail down along the east coast of Africa for quite a distance beyond the Gulf of Aden?

Truly, a new era had set in, an era of international commercial enterprise on an unprecedented scale. West and East seemed no longer separated by immeasurable distances and by the fear of the unknown. The very sea seemed tamed. The Greeks, heretofore somewhat timid as seafarers compared with the Phœnicians, now became more daring and their ships appeared on the sea the year round. Shipbuilding, correspondingly, progressed as never before. Through the Egyptian and Arabian deserts caravans loaded with precious merchandise proceeded slowly but, on the whole, safely along new roads. And it was a matter of no great inconvenience to travel from Antioch in Syria via Seleucia and Susa to Persepolis in Persia, a distance of more than a thousand miles. Good roads uniting important cities existed in these regions even before the Macedonian conquest. The Persian rulers had thus done much for facilitating travel. Roadhouses for the convenience of the travellers had been erected along the roads at a distance of a day's journey from one another, the whole Persian road system, by its excellence, anticipating the great Roman achievements in this line. To Herodotus we owe the description of a Persian state road: the one which connected Sardis with Susa, stretching over a distance of about fifteen hundred miles.

Under Alexander, and still more in the reign of the Seleucids, the road system was very much extended and improved. Traffic constantly increased. From Greece and Macedonia new immigrants continuously arrived in the lands of colonization, either to settle down in cities that already existed or to join in the foundation of new ones. Travellers from very far, from India, and even China, at length began to appear in these parts. Never before had the world seen such a spectacle of cosmopolitan intercourse. Before very long the fame of the new Hellenistic centres penetrated

to the Far East, and representatives of all civilized, and a good many uncivilized lands and races, flocked to these "lodging houses of the universe." The population of the new world cities included residents and transients of the most diversified origin, from the Italian, Phœnician, Iranian or Arabian merchant to the dark-colored native of Ethiopia. The Greeks and Macedonians, however, dominated everywhere by their position, if not by their number. The Jews, numerous in the great Hellenistic cities at an early date, had their main centre in the city of Alexandria, where the Egyptians, of course, formed a third important element, as did the Syrians in Antioch, and the Babylonians in Seleucia.

Indeed, only a few cities of the present day can claim to have a population more polyglot than that of ancient Alexandria. New York with its many Jewish inhabitants and its swarming throng of uncounted nationalities is the city which, above all, comes to one's mind for a comparison. Alexandria, in the last centuries before Christ, was, as New York is today, the chief exponent of cosmopolitanism and of commercialism, of rapid mass development and of instability. Very different was the rise of the giant cities of the Egyptian, Babylonian and Assyrian civilizations; their process of growth was comparatively very slow; they grew like plants in the open, while the new, Hellenistic centres, like the great cities of today, seemed to be the product of the hothouse, appearing, by comparison with their predecessors, as artificial creations in a particular sense. Their basis from the very outset was competitive, capitalistic trade on a large scale, in which industrial mass production played a great role, producers and middlemen having at their command the opportunities of a veritable world market. In brief, these new centres, in an eminent degree, owed their very origin and existence to commercial speculation.

II

Apparently human affairs assumed of a sudden a new aspect. The sudden change, however, was conditioned upon a process of gradual development, in which many forces and influences had concurred to achieve the final result. During centuries the Greeks had been very successful as traders in the Mediterranean and beyond it, in competition with the Phœnicians. Somewhat arrogantly, in the opinion of the Phœnicians at any rate, the Greeks used to refer to the Mediterranean as "Our Sea." The Phœnician traders, for all their shrewdness and tenacity, had been forced to yield ground at many points. The Hellenic cities in Sicily, in Spain and Gaul, in Southern and Central Italy, were founded in defiance of Carthage's might. The Phœnicians were ousted from Rhodes, from Cyprus and Crete, points of primary importance for the domination of trade in the Eastern Mediterranean. Not less effective was the Greek exploitation of the commercial possibilities in the area of the Black Sea.

It is true that Greek industry, in this initial period of commercial expansion, remained within comparatively modest limits, yet it was far from ineffectual as a producer of individual wealth, and economic life, on the whole, ever more tended toward mass production on a capitalistic basis. Thus the stage was well set for a new act to begin when "the man of destiny," Alexander of Macedonia, decisively interfered in the progress of the Greek world. How well set the stage was is evident from the fact that the motive force supplied by the foundation of Alexander's empire remained effective, although his creation did not outlast his reign. The division of the realm did not work any fundamental change. The wars between the dividers of the spoils barely touched the surface without uprooting the seeds laid down in the brief period of unity, of organization, of commercial advance, of assimilation and of amalgamation. Although handicapped by the short space of time allotted to him, Alexander succeeded in what he undertook. He built an empire, not strong enough to last, but sufficiently strong and endurable to produce the boom which subsequent disturbances did not seriously affect.

A true chip of the Macedonian block, Alexander had mainly one aim in view, to create a great sphere of economic dominance, and had he lived longer, he would probably have been able to realize his dreams of further aggrandizing the empire, for he was a real empire builder, in intent as in ability. And, no doubt, he was profoundly convinced of being a veritable benefactor of humanity. There is something typical of men of his kind in the message of reprobation—glorifying his father—which he addressed to mutinous, Macedonian soldiers shortly before his death. "When my father seized the reins of government," his message ran, "you were wandering about as miserable herdsmen, you were dressed in sheepskin coats, tended small flocks of cattle in the mountains and were almost at the mercy of your Illyrian and Thracian neighbors. My father, however, provided mantles to supplant the sheepskin coats, brought you down into the plains and accustomed you to city life, to law and good habits. Those neighbors, whom you hardy equalled, he has made your servants; he has embodied the greater part of Thracia in the Macedonian realm, has seized the coast and thereby opened up the land to commerce and made possible the exploitation of the mines.[1] The Thessalians whom you greatly feared now obey you; Athens and Thebes are so intimidated that they seek support with us, whereas you formerly paid tribute to Athens and were politically dependent of Thebes. Sparta he has re-

[1] The silver mines at Philippi, which city had been founded by Philip.

duced to impotence, and all the rest of Hellas choose him for their military leader, with unrestricted power, against Persia. The honor that all this has brought is yours not less than his."

Yet, what his father Philip had done seemed pretty insignificant in comparison with his own glorious achievements which he thus brought excellently into relief. He, too, and in a much higher degree than Philip, conferred upon humanity those benefits and inflicted those evils that are attendant upon the foundation and extension of cities. He did it in a more systematic way and with much more far-reaching aims in view than those of his father, aims commensurate with the enormous expansion of the Macedonian realm. That he had opportunity, in the course of his meteoric career, to found more than seventy cities, as Plutarch claims, can not be confirmed and is probably exaggerated. But his endeavors along this line were certainly so great that nobody can dispute him a place among the foremost city founders.

However, his city foundations, like those of Philip, were of a character very different from that of the Greek-founded cities of earlier origin. Unlike those colonial cities that sprang up under the ægis of the Greek city, states, Alexander's city creations had their root in the designs of an imperialistic policy. They were part and parcel of a great political organization and not at all comparable, as to their status, with the politically independent colonial cities of the preceding age, although, perhaps, enjoying from the outset a certain amount of autonomy. With regard to the earlier Greek colonies we can not speak of a definite urbanization policy as underlying their foundation. They were scattered outposts of Hellenic enterprise and culture in foreign lands, forming fully developed and autonomous Greek commonwealths, and guarding their independence with pride and jealousy, although associating into leagues for common worship or for political ends. Thus the relation between a mother city and her colonies was "not a political one of government and dependency, but one of affection and dutiful attention." However, armed conflicts between mother and daughter cities sometimes occurred, and few colonies escaped becoming embroiled in wars, either with other colonies, with cities of the mother country or with non-Hellenic states.

On the other hand, those Greek cities, which, under Philip, Alexander and their successors, arose in Macedonia, Thessaly, Thracia, Asia Minor and the near Orient, were and in general remained subordinate parts of extensive states, monarchic as to their constitution. The policy of urbanization, to which these cities owed their origin, was of course not new—it was exemplified in Egypt, Assyria and Babylonia many hundred years before the Hellenistic Age—but the circumstances surrounding their rise were particularly apt to intensify the inevitable dire results and to aid in speeding up the undermining of civilization. How true this is we realize in remembering that Græco-Roman civilization was fast declining only a few hundred years after Alexander, and even at the time when the Greek world fell a prey to the Roman conquerors the process of decay was actually in an advanced stage. True enough, the condition of the Hellenistic world was highly flourishing according to the current standards of "progress," and it may sometimes have been thus described even by historians, but, in reality, its outward display of magnificence and splendor very much reminds us of the fact that a fruit may be sound and beautiful in appearance, while its core, nevertheless, is over-ripe and rotten.

That Græco-Roman civilization "spent itself" so rapidly is mainly to be ascribed, it seems, to its economic conditions. In the ancient Oriental civilizations urbanization also played a great role; nevertheless their process of development and of deterioration was slow, extending over many centuries, because their economic life was self-contained, slow in progress and comparatively free from instability and fluctuations, never being based to any great extent on industrial mass production and international, competitive trade. On the other hand, the Græco-Roman world, from the Hellenistic Age onward, confronts us with the spectacle of a really febrile economic development, characterized by movement and fluctuation, speculation on a vast scale, instability and restlessness, for its economic life was intensely industrialistic and mercantilistic and rested on a basis of international, capitalistic trade and exploitation, indicating a condition similar to that of the world of today. One of the main consequences of this condition, of course, was then, as now, that corruption rapidly increased among all strata of society.

How quickly and thoroughly this process of development engulfed the Mediterranean world, we may conclude from that passage of Strabo's *Geography* in which the author, writing at the time of Christ, complains that "the manner of life customary among us has spread almost everywhere, and brought about a change for the worse, effeminacy, luxury and over-great refinement, inducing extortion in ten thousand different ways. And doubtless," Strabo continues, "much of this corruption has penetrated even into the countries of the nomads, as well as those of the other barbarians; for having once learnt how to navigate the sea, they have become depraved, committing piracy and murdering strangers; and holding intercourse with many different nations, they have imitated both their extravagance and their dishonest traffic, which may indeed appear to promote civility of manners, but doubtless to corrupt the morals and lead to dissimulation, in place of the genuine sincerity we have before noticed."[1]

[1] Strabo, *Geography;* Book VII, chapter III.

Strabo was an avowed admirer of many of the barbarians—in their uncorrupted state; but he was a very deliberate observer, by no means given to exaggeration or to cavilling against the established order. He merely felt regarding civilization of his time as many of us feel respecting civilization of today: that civilized man, in pretending to confer its doubtful benefits on the "uncivilized" as a blessing, makes himself guilty of a preposterous imposition.

The observations of Strabo, just quoted, are significant also in that they reveal his keen sense of the fact that economic conditions, more than anything else, determine the destinies of civilizations. Neither at his time nor later did Græco-Roman civilization possess cultural unity, but the Mediterranean area, even before Roman domination, may well be spoken of as one distinctive economic sphere, to which the political unification into one vast realm—which was completed soon after the death of Strabo (about 24 A.D.)—brought an even higher measure of economic interdependence between its different parts. To Strabo it must have appeared certain that the many diversified countries which constituted the Roman Empire were in the fold of a common fate as regards their civilization, not because they formed a political unit but because they were one vast economic sphere.

The political unification of this sphere was largely achieved through citification, used quite deliberately as a means of weakening the "tribal spirit," of ironing out differences without applying coercive measures, which the level-headed Romans—in their era of conquest—usually avoided, and, as a final result, of moulding the world as a whole, as much as possible, into one "efficient organism". In the East, Alexander and his successors initiated the great work of urbanization for political and economic purposes, while the Romans, still confined to the Western Mediterranean area, pursued the same policy in and outside Italy. As the Roman Empire expanded, these endeavors were continued in systematic fashion, notably in Spain, Gaul, Britain, the countries along the Rhine and the Danube, and Northern Africa. Similar efforts, aiming at concentrating people in cities in an entirely deliberate manner, are not unknown in the modern era, but they are not so consistent and extensive as in the Græco-Roman world, for the evident reason that they can be dispensed with in the age of the railways. Even nowadays, however, we sometimes witness the eruption of a concerted endeavor to urbanize some region for distinctly speculative gain, of which the present Florida development is an outstanding example, and such instances of the present day, just as those of the very speculative Hellenistic and Roman Ages, make us realize to what an extent and in what a degree economic speculation may succeed in dehumanizing humanity by herding people together for the sole purpose of boosting values and squeezing out profits.

The circumstances surrounding the Hellenistic city foundations were often such as to offer a parallel. Those cities that rose rapidly were of course all situate in positions advantageous from the viewpoint of commerce. However, it is the purposeful concentration of people in these cities that largely accounts for their rapid rise. Never before had the Greek world seen such concentrations undertaken on so great a scale as under Alexander and his successors. The process of synœcism, as applied earlier, had primarily aimed at raising one city to a preponderant position within a limited region by making it the centre of administration. This centralization was attended, in various instances, by a migration to the centre of part of the population that inhabited the region. Economic speculation, however, was not often the dominant motive in these operations before the Hellenistic Age. Thus, but few of the earlier instances of synœcism seem really comparable with, for example, that process of concentration, recorded by Strabo, by which Cassander, a successor of Alexander the Great, vastly increased the population of the insignificant city of Therma, at the same time renaming it Thessalonica in honor of his wife (about 315 B.C.). At the behest of Cassander people from twenty-six neighboring towns emigrated and settled down in the harbor town of Therma which was favorably situated and henceforth rose with rapidity to becoming one of the important commercial centres of the Greek world. Similarly, the rapid growth of Seleucia, on the River Tigris, was for a great part due to the influx of people from the neighboring Babylon, a movement that was engineered by Seleucus Nikator, the founder of the new city.

III

In the category of such speculative concentrations as the examples just mentioned belong many, perhaps most, of those brilliant Hellenistic city foundations which irresistibly fascinate us as an urban galaxy, because of their undeniable appeal to our imagination. For, in spite of all, their scale of grandeur can not fail to impress us, accompanied as it was by a lavish display of beauty. But let us not deceive ourselves with regard to their origin and their real nature, as to the greediness of gold and power that called them into being and their truly terrible embodiment of the vile aspects of human life. The rapid rise of the great Hellenistic centres was in an eminent degree conditioned upon the formation of a numerous proletariat. It was a development attended by the accumulation, within no long time, of such great riches in a few hands that it seemed as if an unknown power in the upper regions had suddenly turned barrels of gold up-

side down—just as Zeus, according to the legend, once shed a rain of gold on the island of Rhodes—and this metalline manna, of course, showed a remarkable adhesion, hitting the earth in clumps and remaining, in well-rounded heaps, on the spots where it happened to fall.

The display of luxury engendered by this amassing of wealth was prodigious. Reckless extravagance, the ancient historians tell us, was in evidence also in urban centres of the pre-Hellenistic period, notably, it seems, in the richest colonial cities of Sicily and of Magna Græcia, but, after all, their prodigality can not stand a comparison with the veritable orgies of "mad luxury" in which the *nouveaux riches* of the great Hellenistic centres indulged. Regarding Alexandria and Antioch, in particular, it may well be said that they set imperial Rome examples for emulation. The property standards of the past, such as they had been in the Greek world, were dwarfed of a sudden. In Attica, *circa* 400 B.C., a landed estate of about 100 acres was considered great. But Aristokides of Assos, general and minister under Antiochos Soter of Syria (280-261 B.C.), owned land to the extent of about 1500 acres, which had been presented to him by his sovereign. And the historian Polybios relates that Hermeias, the chancellor of Antiochos the Great (223-187 B.C.), was able, on opportunity, to pay the royal army out of his own pocket, although the armed force of Antiochos was by no means "a despicable little army", even if of secondary magnitude. Again, Polybios tells that one of the ministers of Antiochos Epiphanes possessed silver services worth a million drachmas. And Strabo stands for the report that Lysimachos, one of the Seleucids, on an occasion presented each of his three hundred guests with a massive silver cup weighing four minae (at least 40,000 grains). Finally, Professor Rostovtseff, foremost authority on the land conditions of Hellenistic Egypt, makes us acquainted with the interesting fact that Apollonios, minister of finance of Ptolemæos Philadelphos, received as a royal gift an estate of about 6,800 acres. And, to be sure, there were plenty of private fortunes to match those of kings or of high officials, which, of course, are best known to us.

In Greece proper so great individual wealth was not attained in this period, although sizable fortunes also based on land-ownership were amassed there, notably in Sparta. However, to the Greeks of the Hellenistic Age, the near Oriental regions were the land of economic promise just as is America to Europeans today. It was here that "the Greeks, as travellers, prospectors, concessionaries, above all as the foremen and agents of Eastern and Western finance alike, had swarmed in and taken occupancy wherever there was a collector or a post office." [1] And along with the Greek swarms came all the other swarms from the surrounding lands, poor people who were unable to make a living in their native place, people fairly well off whose appetite for money could not be sufficiently satisfied at home, and rich people who wanted to speed up the increase of their wealth. It was a general scramble for money on a vast scale; the hindmost, who as usual constituted the overwhelming majority, were engaged in production, making the invested capitals interest-bearing through assiduous toil which was poorly paid. Of the great industrial fortunes built up by their labor we are less well informed than regarding those based on land-ownership, but the occasional size of the latter permits us to draw conclusions concerning the former, all the more as there are other circumstances which indicate that mass production yielded the most ample returns to those who were in control of the industry. In Alexandria manufactories employed hundreds of workers, slaves or free men, and industrial monopolies, in which the Ptolemæan rulers had a great share, were of vast importance. Alexandria was a beehive of activity, and the Roman emperor Hadrianus, desirous of emphasizing this fact, characterized it, in a letter, as the city in which no one goes unemployed, but this statement was scarcely apt to throw light on the actual conditions, because, aside from the numerous life-enjoying parasites, Alexandria included, in the age of Hadrianus as well as earlier and later, many poor people who periodically lacked work and had to be cared for by the distribution of public doles. But the dole system was not confined to the greatest commercial and industrial centre of the Hellenistic world; it found a wider application, so that the Romans, when forced to introduce it in their capital, merely imitated a Hellenistic custom.

This economic picture of one of the greatest periods of urbanization, sketchy as it is, would be very inadequate, if no mention were made of the downward trend of agriculture that accompanied the rise of urban industry and became noticeable in Greece even before the Hellenistic Age. As the importance of industry and trade increased, the Greek farmer, like the farmer of today, became ever more adversely affected by the revolution brought about in economic life down to its very foundations. As early as the sixth, and even the seventh, century B.C., Greece traversed the severe agricultural crises which the legislation of Solon, as regards Attica, was intended to alleviate. But since these measures did not remove the fundamental causes of the evil, the position of the farmers remained precarious, and, as the industrial and commercial development gained in intensity, their situation became more aggravated. Agricultural industry became infected, as it were, with the instability which, like a chronic disease, inheres in speculative trade and industry on a capitalistic basis. With the formation of great landed estates speculation seized upon agriculture and land,

[1] J. L. Myres, *The geographic aspect of Greek colonisation.* Proceedings of the Classical Association, 1911.

capitalism invading the countryside on a large scale and effecting a "mobilization" of the fundamentally stable element in the economic organism of society. Agricultural land, a non-augmentable productive agency and as such the very basis of human existence, was henceforth, as everything else that could be bought and sold, essentially a speculative object placed on a par with shoes or paper.

The formation of great landed estates had in general the effect of lessening production, because the owners very often did not possess the experience of farmers, while the peasants, more than the big land owners, labored under financial difficulties due to the changed economic conditions. Symptomatic of this development were the revolutionary movements among the Greek peasantry in the fifth and fourth centuries. The undermining of the peasant class proceeded irresistibly, and it continued to do so in the Græco-Oriental world in the Hellenistic Age. The conditions of Egypt, owing to certain peculiar circumstances, seem to have been somewhat better than those obtaining elsewhere, but this does not change the general aspect of matters.

IV

Thus, in the Græco-Oriental world of the Hellenistic Age, as in Italy during the Republic and, later on, in most parts of the Roman Empire, urbanization and industrialization proceeded together, while the great landed estates grew and the peasant class dwindled. The cities, more especially the great centres of industry and trade, absorbed many of the elements that became uprooted in this process. Just as Rome was a receptacle for Italian peasants, so were the great Hellenistic cities for those of the Græco-Oriental countries. On entering the cities most of the uprooted became for the rest of their life enrolled in the standing army of urban proletarians. In almost all cases, no doubt, they left the soil behind forever and changed their being into a semblance of that of the "urbanites"—outwardly at least. They were henceforth members, apparently, of a more cultured world, of a world which seemed to lead, and actually did lead, an existence detached from that of the surrounding land, even though it received from this land many of the material necessities of life. Nothing could be more alien to a "son of the soil" than these monster cities which were entirely as artificial as the great urban centres of the present day and which had to be kept alive through the most laborious provisionment, as the supplies largely had to be brought in from far away by slow methods of transportation, a circumstance that increased the precariousness of their existence. Their conditions were, on the whole, anything but attractive. Their magnificence, in parts and spots, could not fail to make an impression, which, however, would be the main and lasting one only with superficial observers. To more judicious minds their splendor seemed to have been produced at too great a sacrifice of reason and equity. Their "architectural glories" and high-life luxuries were brilliant and seductive, but they presented themselves, unfortunately, against a background of the gloomiest shadows of misery and discontent. As early as in the reign of Eurgetes Physcon (146-117 B.C.), Polybios, the Greek historian, visited the city of Alexandria which had been founded in the year 332; its development in the course of two centuries had been such that Polybios was "filled with disgust at the state of the city."[1] Yet what Polybios saw was probably not half as bad as what visitors observed two or three centuries later. Indeed, it was with good reason that the greatest centres of the East, Alexandria and Antioch, produced a scare that became chronic with some of the Roman emperors who dreaded these cities even more than their capital, not only because they thought that the latter could be kept in check more easily, but also because the explosives stored in the former, although less formidable as to quantity, were nevertheless very dangerous; the populace of Alexandria and Antioch was very heterogeneous, even more impulsive than that of Rome, and ready to strike on the slightest provocation. Internal tranquillity was the last thing that these cities possessed, agitation was rather their normal condition, tumults and disorders seem to have been indispensable tonics for the vast masses of their populations, and in the mêlée the "indolent Orientals" took the liveliest part.

Many of the conflicts were in the nature of internal factional strife, but this condition of unrest was very much aggravated by the widespread social dissatisfaction which had its cause in the living conditions of the majority. Poverty was most prevalent among the indigenous population which, in these Greek cities on Oriental soil, was actually at the mercy of foreign masters. We know a good deal about the position of the native Egyptians in Alexandria; their situation, whether they were slaves or free, was pitiful in the extreme, although it became somewhat better in the course of time. It was worse than that of the Jews, who, on the whole, seem to have had less reason for complaint, as they enjoyed considerable privileges, whereas the Egyptians were referred to as "animals" and were often treated as if being in a class with the wild beasts. In Alexandria, as elsewhere, the Hebrews incurred a good deal of enmity among the non-Jewish masses and could not avert occasional massacres, which in one instance, in the reign of the emperor Caligula, assumed formidable proportions. Later on, in the reign of Trajanus and of Hadrianus, the Alexandrian Jews took a conspicuous part in the

[1] Polybios, *Histories.* Book XXXIV; chapter 14.

widespread Jewish uprisings against the Romans, a circumstance which was not apt to improve their situation. On the other hand, prominent Jews, in the time of Roman dominion, were occasionally honored by being appointed to high official positions. However, the descendants of the Greeks and the Macedonians were then, as before, the dominant class by tradition as well as by wealth and culture. They, above all, occupied the luxurious dwellings and sumptuous gardens of the high-class Alexandrian suburbs, as of the rich suburbs of Antioch and of Seleucia. The walled-in area of these cities was ever more deserted, as a place of residence, by the wealthy burgesses, just as the central quarters of Paris were abandoned in the seventeenth and eighteenth centuries by the nobility and the *nouveaux riches*. The Faubourg Saint Germain and the Faubourg Saint Honoré had their counterparts in the exclusive suburbs of the great Hellenistic cities whose congested centres, as in the case of seventeenth and eighteenth-century Paris, developed into conglomerations of workshops, manufactories and slums, "relieved" by the presence of a number of stately and costly representative buildings, many of which adjoined the principal thoroughfares.

In this connection Paris can be mentioned both for a contrast and a parallel; as to its configuration eighteenth-century Paris was as different from the Hellenistic centres as well could be, for the street plans of the latter, according to all indications, left little to be desired as regards regularity. Thus, the more or less dilapidated, well-crowded tenements of Alexandria or of Antioch, unlike those of Paris, were lined up along straight, extensive streets that, however, seem to have been very narrow, as a rule. Is the extensive congestion of these cities evidenced in a more conclusive way than by inference from the conditions of Rome, of which we are better informed? The East-Siders of Alexandria, Antioch, Seleucia and other Hellenistic centres were perhaps better off than those of the Roman capital, of the old and the new Carthage, and of Constantinople in later times? A slight difference in favor of the Eastern cities may have existed, but as regards Alexandria, in particular, we seem rather justified in assuming that it equalled Rome in regard to population density and overcrowding. That it did so we may conclude with some measure of certainty from the housing conditions that obtained in the smaller Egyptian cities during this period. Our knowledge of many of them is better, because their remains of papyri are more abundant, those of Alexandria having perished to a greater extent owing to its damp climate and to the many changes and destructions of its long, eventful history. The provincial papyri, however, speak a language that cannot be misunderstood. For instance, from a papyrus of Arsinoë we gather that twenty-seven people inhabited one-tenth of a house in that city, obviously an apartment house of several stories, such as were frequent in the provincial cities of Egypt. And it goes without saying that Alexandria must have by far surpassed the smaller towns. When even they built many apartment houses, the aggregation of hundreds of thousands, the rapid increase of the land values and the undoubted extensive land speculation must have concurred in making great parts of Alexandria a conglomeration of densely and highly built-up, hideous slums. That similar conditions prevailed in the other great centres, notably in Antioch and in Seleucia, who can doubt? And is there any real mitigation in the circumstance that the climate in those regions permits and induces more living in the open than is possible under northerly latitudes? The indubitable answer to this question may be given by the physicians and slum-workers of present-day Alexandria or Cairo, or of the great South-Italian cities; for instance: the slums of Naples or Palermo, climatically about as favored as the cities of Egypt, do not seem less detrimental in their effects than those of Paris or Berlin, not to the casual observer at any rate.

In the last analysis, then, what can we state conclusively regarding these brilliant urban stars that shone in the Eastern hemisphere through centuries except that they were radioactive, not only like heavenly orbs but also like those metalline elements whose rays imperceptibly, slowly achieve their deadly work of destruction. These cities developed into centres of Greek culture, but they were founded primarily for political reasons as bulwarks of economic conquest and expansion in an essentially mercantilistic age. This explains their rapid growth which is in sharp contrast with the preceding urban development in the Greek world, and it also accounts for that hybrid character which distinguished these vast urban agglomerations despite their Grecian origin. In this respect cities like Alexandria, Antioch and Seleucia were very different from those Greek colonies that were founded in Sicily, Italy, the Black Sea countries and elsewhere hundreds of years before the great mercantilistic era. Syracuse, Selinus, Tarentum, Sybaris, Massalia, Cyrene and Sinope are names that convey the idea of really exotic plantations on foreign soil, plantations which preserved an essentially Greek stamp through centuries. Their true counterparts in the Hellenistic East were not to be found among the great mercantile centres, but among the smaller cities of Greek origin, which no doubt were often truly representative of Greek life. There is evidence of this, for instance, in the conditions of the city of Gadara—in Batanæa, not far from the Lake of Gennesaret—which was unfavorably situated from the viewpoint of commerce and therefore, in growing slowly, pre-

served its Greek character and developed into a probably typical provincial centre of Greek culture. However, outside the gates of Gadara, as beyond the suburbs of Antioch, Seleucia and Alexandria, were the vast expanses of foreign lands, whose agricultural population, to a great extent, seems to have remained utterly untouched by Greek cultural influence. It is significant that even hundreds of years after the foundation of Antioch and of Alexandria, the indigenous population of the surrounding regions was wholly ignorant of the Greek language, according to the evidence of ancient writers. Here and there some superficial cultural influence was probably noticeable, but the rural populations, with characteristic persistency, preserved on the whole their ancient customs and remained true to their ancestral traditions, thus forming the stable basis from which a new, essentially Oriental culture later arose. We possibly do not err in assuming that it was this condition, more than anything else, which caused the Roman emperor Caracalla to refer, in a public manifest, to the country population of Egypt as "those Egyptian peasant scamps."

Thus the monster cities, the great, man-devouring furnaces of civilization, succeeded in really Hellenizing the countryside no better than did the smaller centres. Still less did Roman culture—which never gained a really firm foothold in the East—succeed in conquering this part of the world. But in a hundred ways, other than cultural, the indigenous populations were drawn within the circle of urban radiance, becoming contaminated, in a higher or lesser degree, with the many pollutions of a decadent urban civilization.

NILS HAMMARSTRAND.

"The Little Red Schoolhouse" as a Theatre

"Whether the legitimate theatre likes it or not the fact remains that every year sees a reduction in the number of structures, outside of New York and two or three other of the large cities, devoted exclusively to the presentation of dramas and musical plays.

"There are a dozen factors responsible for this reduction, no one of which is wholly to blame. The high cost of travelling; the calibre of road companies; misleading advertising; competition from vaudeville, motion pictures and the radio all play their part. New theatres are built, it is true, but there are not enough of them to balance the losses occasioned by competition and the rebuilding of our cities.

"More and more it is becoming apparent that even when road companies do go out in greater numbers than now, they will have to count on playing, in many cities, in halls which were not designed primarily as theatres.

"This is a fairly common experience for many of the Lyceum or Chatauqua companies, and for those who accept independent bookings. One of Equity's members who has been concerned in this type of entertainment for many years wrote recently:

" 'I have played in school auditoriums, appearing on Lyceum Courses, University Extension Work, and Independent Bookings. Nearly ninety per cent. of our bookings are filled in school or community auditoriums.

" 'Nearly all school buildings are now constructed with a central assembly hall or auditorium, which is frequently quite as large as any but a first-class theatre. But the care which is expended on the seating arrangements is not extended to the stages, or more often, the architect is unaware of the peculiar problems which crop out in the presentation of plays.

" 'As a result of these deficiencies the stages of these school or community auditoriums are so small, or so shallow, or constructed so crudely, that they impose an almost insuperable burden on those companies which are forced to use them.

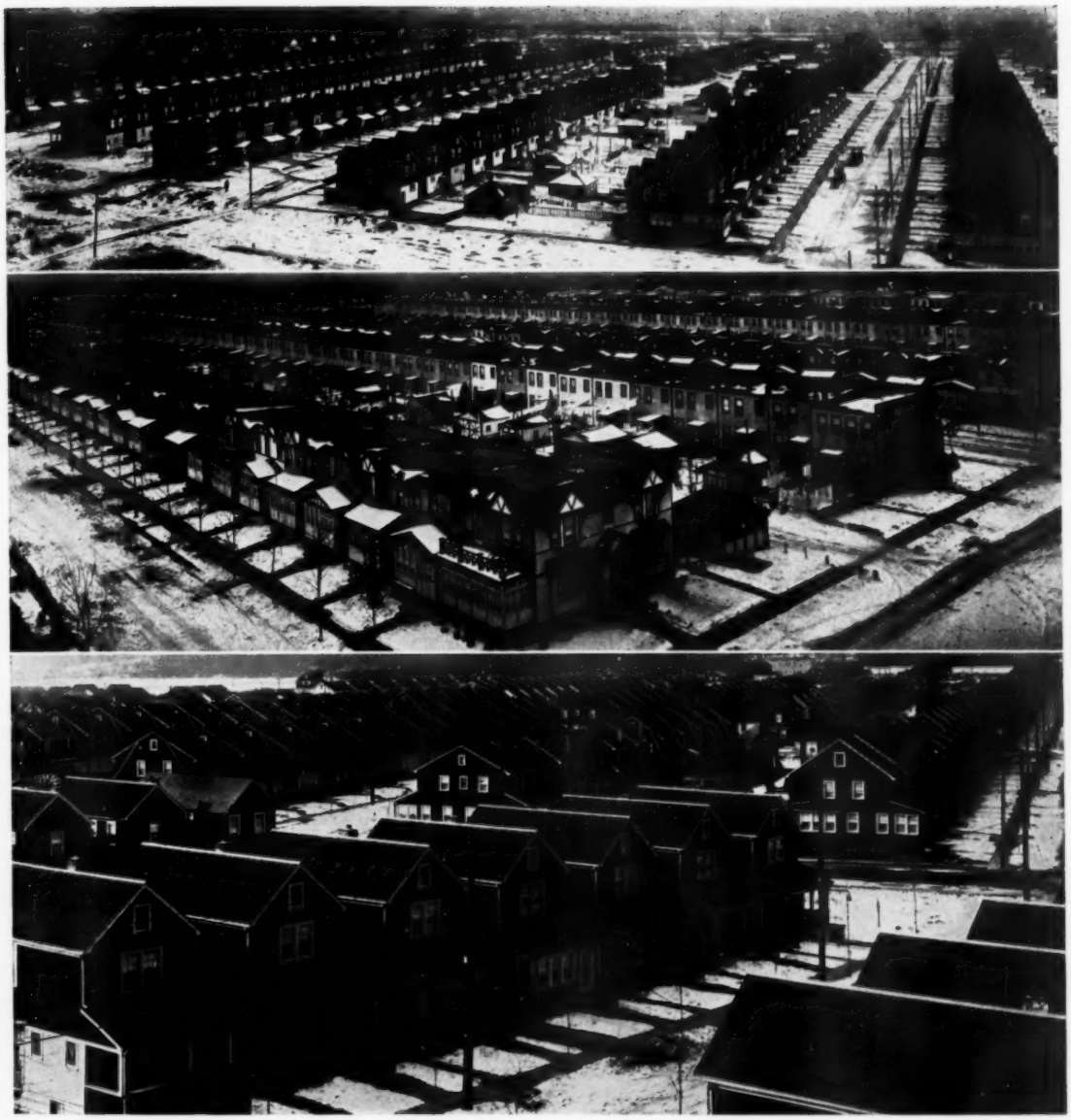
" 'If, then, "The Little Red Schoolhouse" is to become the theatre of the future for many of our smaller towns, it is very greatly to the interest of all concerned that it should be as complete and as well equipped a theatre as is possible with the money available.

" 'Certainly there are few enlightened communities today which do not admit the educational and cultural value of the drama, or which would choose to forego it entirely. And just as those enlightened communities do not ask their pupils to study in dark, cold, cramped schoolrooms; or require their teachers to prepare for the day's work in the cellars, so at least equal consideration should be shown to the præcentors of the drama.

" 'Theatrical construction involves principles which are not generally employed in ordinary buildings, and it is not to be expected that the knowledge it requires be widespread. But it is not too much to hope that local architects who may be called upon to design school or community buildings, conscious of their potentialities and cognizant of the difficulties involved, should consult recognized theatrical architects for that part of their work.

" 'If every theatre is to be housed in a school, or a community hall, then let us, at least, try to insure as adequate housing as can be devised.' "

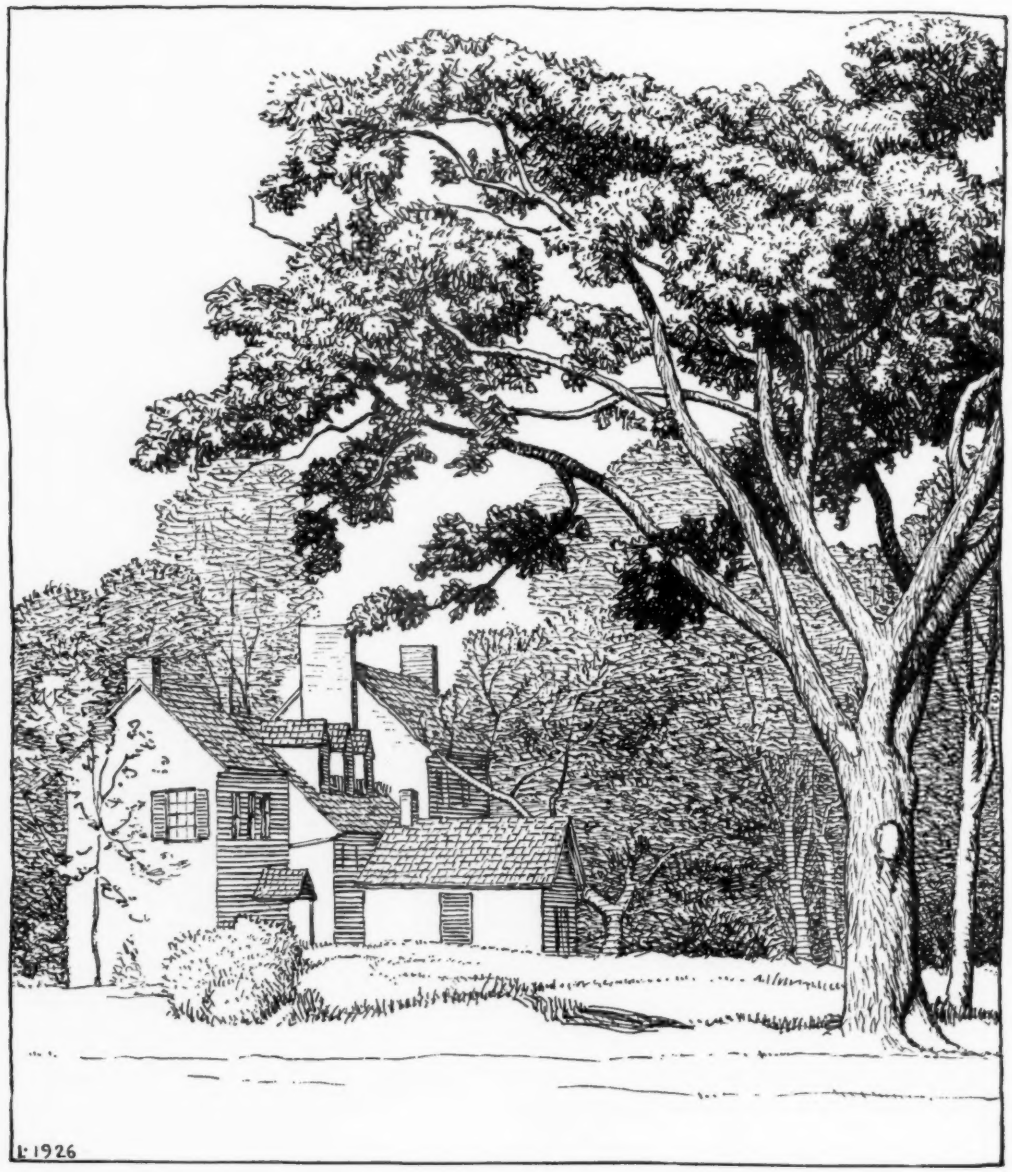
Mr. J. Monroe Hewlett comments upon the above recent editorial in *Equity* as follows: "The only point with which I should take issue is the assumption that in order to make a school auditorium suitable for simple dramatic productions it is necessary for the architect to consult a recognized theatrical specialist. In a matter of such great value in an educational sense it seems to me that any architect who would think of undertaking a school building (and who would not?) ought to be fully informed. There is a general impression, which is rather encouraged by those who specialize in theatrical matters, that some deep mystery surrounds the planning of the stage. As a matter of fact the essentials of a well equipped stage are so simple that there is no excuse for any practising architect to be ignorant of them."



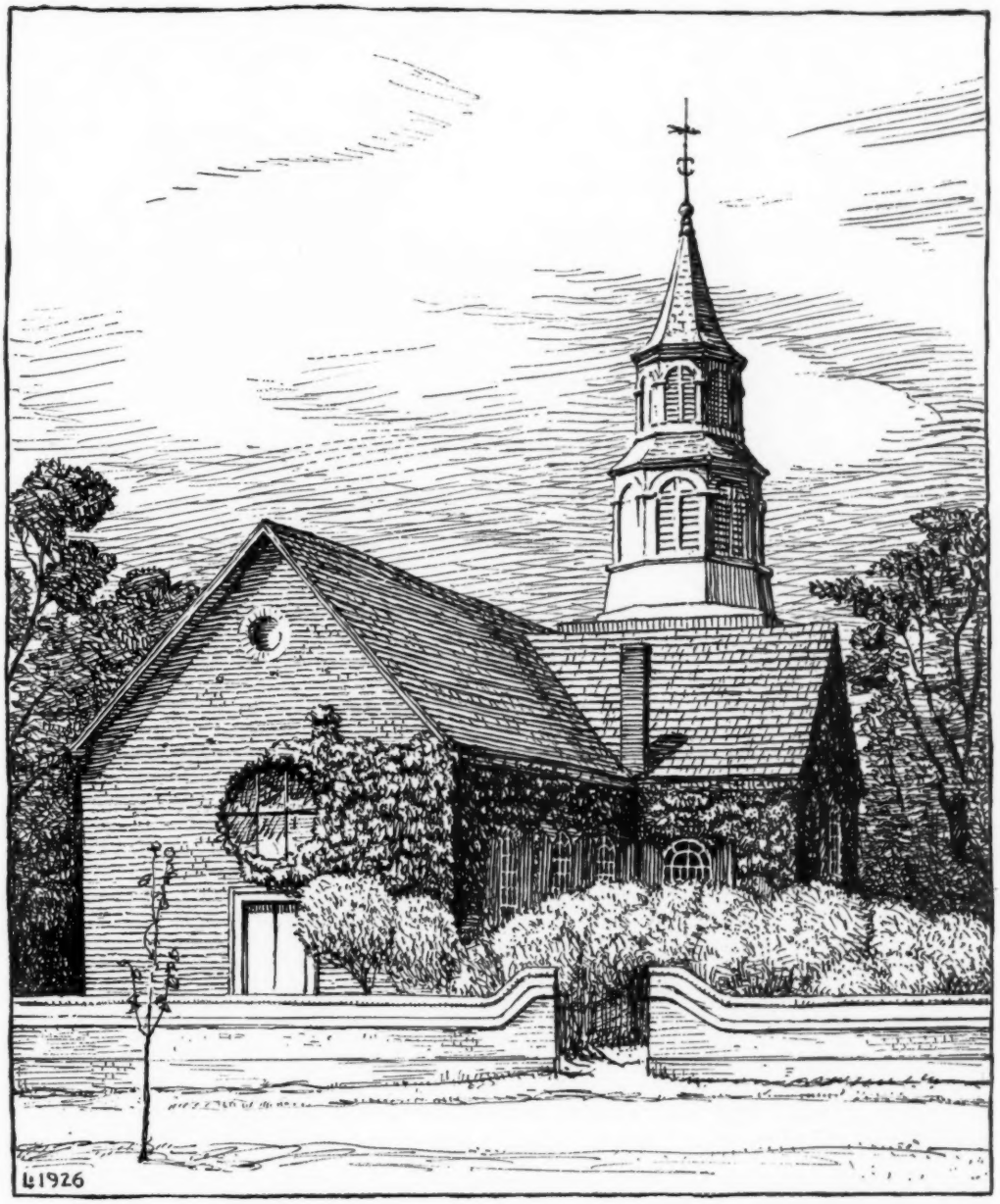
CITIES OLD AND NEW: TYPES OF VAST AREAS OF RECENT SPECULATIVE HOUSING DEVELOPMENTS ON LONG ISLAND, NEW YORK

Said to constitute the greatest fire hazard in the United States and suggesting the following historic comparison: "But owing to the rush of population to the new capital of the world, the Emperor (Constantine the Great, 330-337 A.D.) soon had on his hands a housing problem which he disposed of with an efficiency we may envy. The forests of Belgrad supplied unlimited timber, and the island of Proconnessos no less unlimited marble. . . . The work was done at surprising speed; and judging from contemporary complaints of jerry-building, the capital was run up very much on the lines of a modern empire exhibition. If Rome wasn't built in a day, New Rome very nearly was. Themistius, a contemporary chronicler, reports that the city had to be practically rebuilt by Constantine's successor, Constantius." — *Constantinople.*

By George Young



In Williamsburg, Virginia
After the drawing by J. J. Lankes



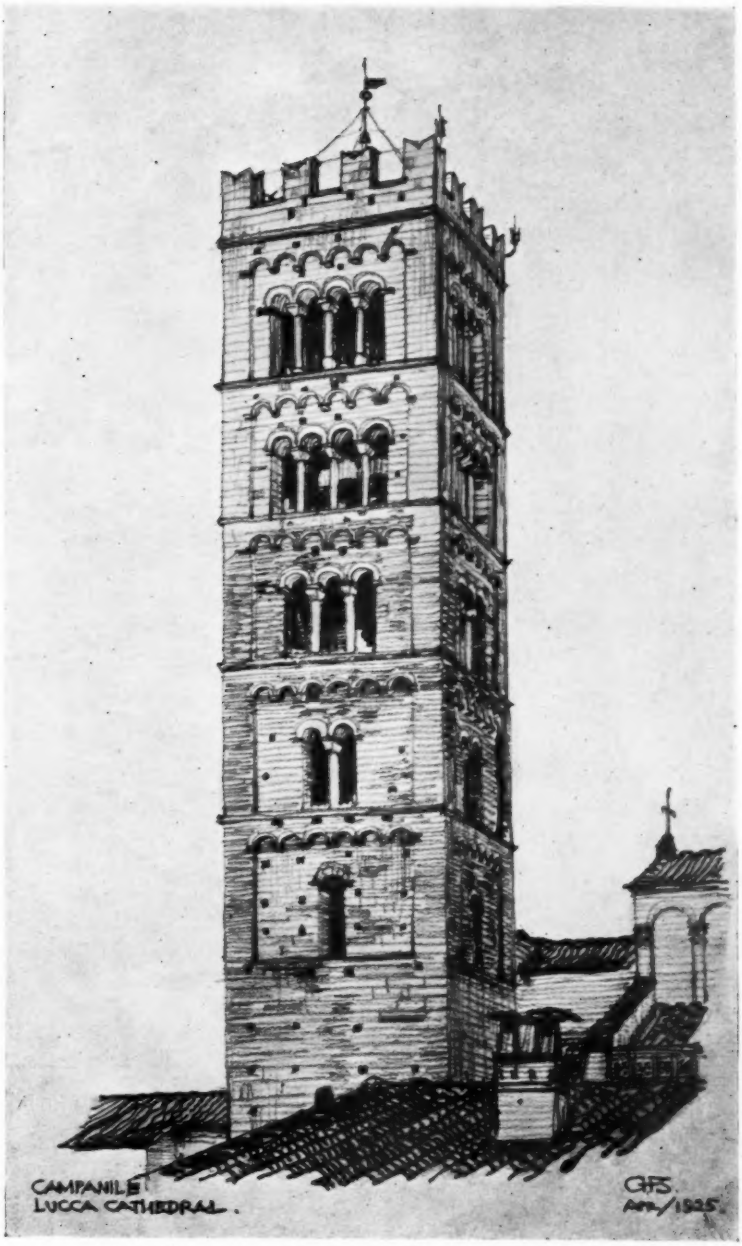
BRUTON PARISH CHURCH,
WILLIAMSBURG, VIRGINIA
After the drawing by J. J. Lankes

Ten Architectural Drawings from Scotland

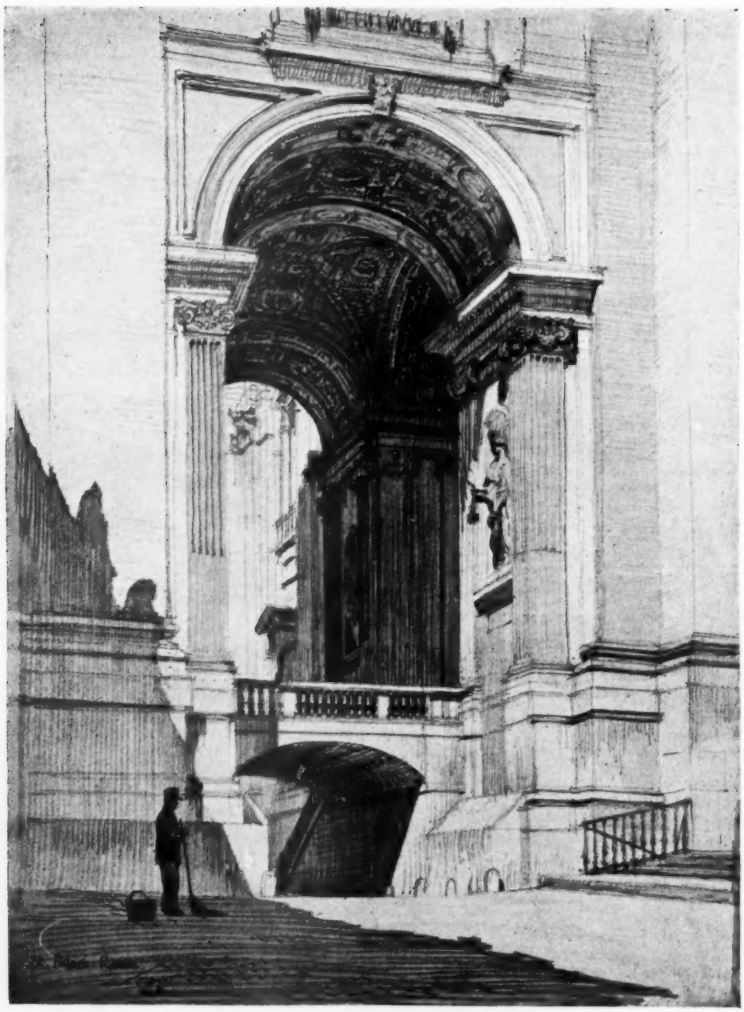
After the drawing by Mr. Thomas Mitchell, Dundee School
Courtesy of the Incorporation of Architects in Scotland

After the drawing by Mr. George F. Shanks, A.R.I.B.A., Glasgow School

After the drawing by Mr. John Watson, Jr., Glasgow School



After the drawing by Mr. George F. Shanks, A.R.I.B.A., Glasgow School



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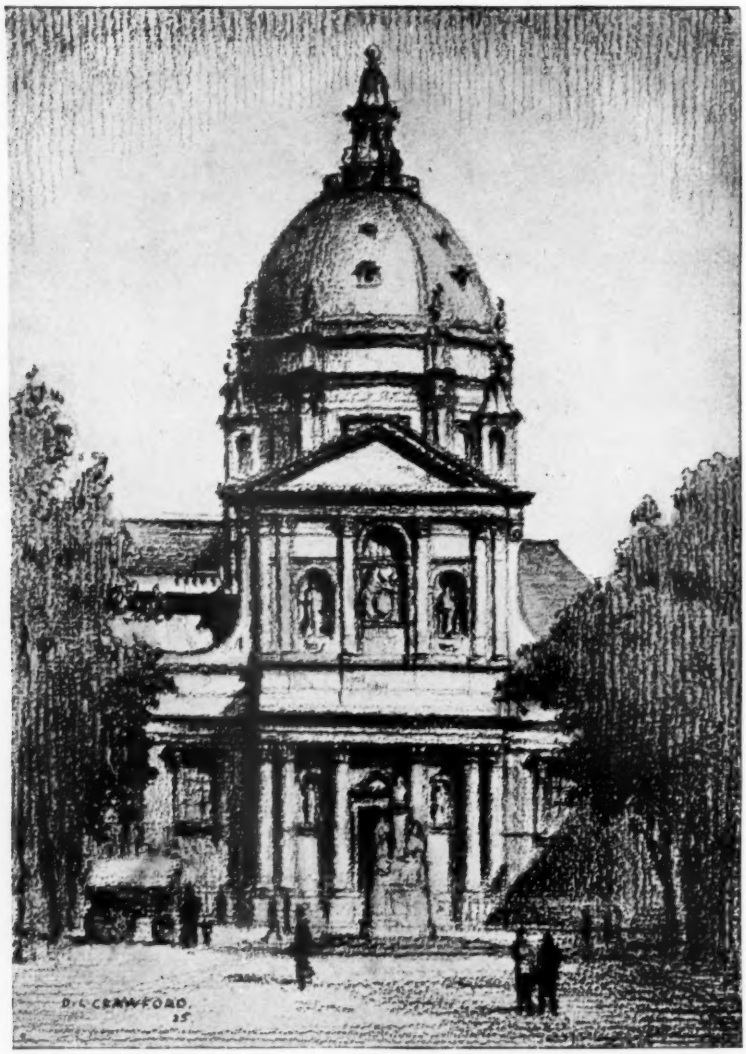
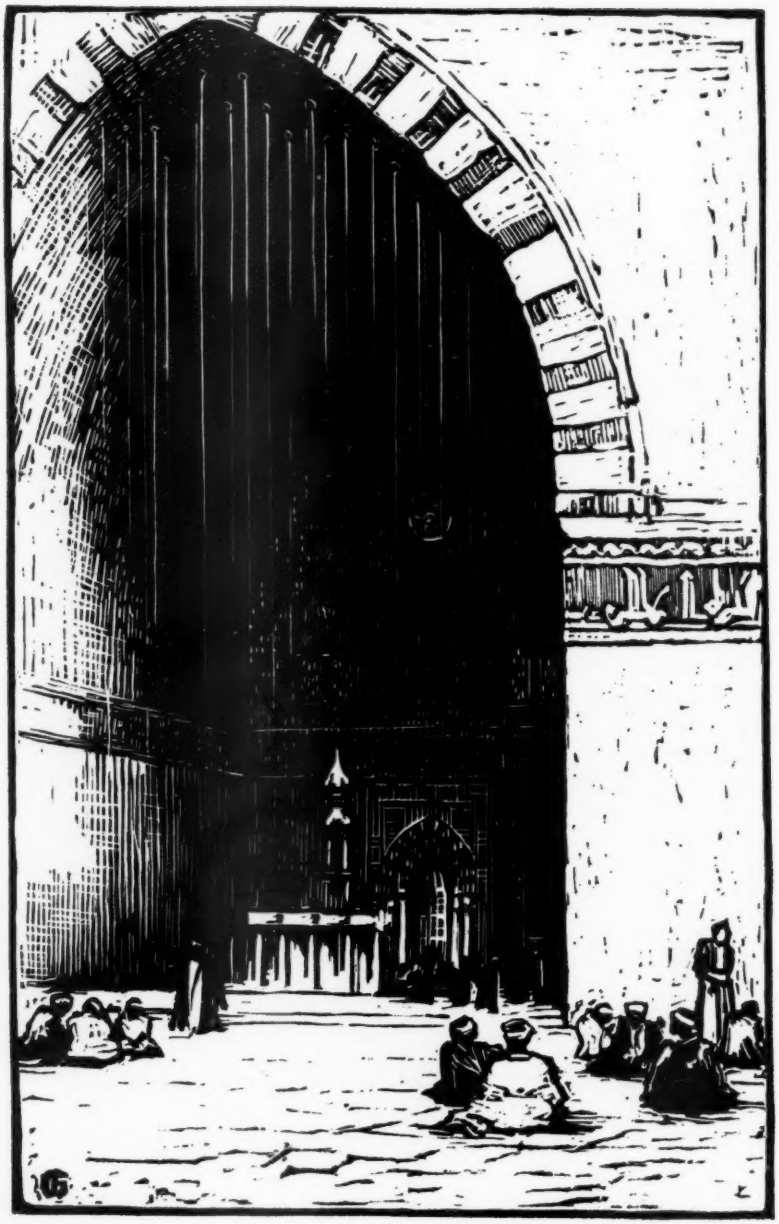


"The Sorbonne Church, Paris"
After the drawing by Mr. D. L. Crawford, Glasgow School

After the drawing by Mr. Thomas Mitchell, Dundee School

After the drawing by Mr. John Watson, Jr., Glasgow School

After the drawing by Mr. Thomas Mitchell, Dundee School



After the woodcut by Ch.-J. Hallo
From "Byblis"

Some Recollections

LONG-HAND, the letter press, and drawings copied by hand, were the ordinary routine of offices in the seventies and it is difficult to realize what a difference in office administration has been due solely to shorthand, the typewriter, the manifold paper, and blue-printing and other photographic processes. These alone, however, would not have accounted for the complete change in business administration. Two other things contributed to this. One was the spirit of *camaraderie* which developed in the group of young practitioners in the eighties. This meant a constant interchange of ideas among men who were thinking day and night of their profession and trying to put it on a sound basis, where, as business men, they could talk to other business men on their own terms. Reference has been made to the forms which were early introduced and are now common to all offices. These grew up in direct response to the demand for business methods, and at first each office devised its own forms. To a certain extent this is still true of the certificates for payments, orders for changes, and other minor forms used in administration, but the more important documents are standardized and this is due to the American Institute of Architects.

The other thing then was the American Institute of Architects. Up to 1887 it had been an association of gentlemen practising an art, not very fully understood by themselves, and hardly at all by their clients. The Institute did very little constructive work for the benefit of the profession, and that the Institute owed any service to the building trade or to the public was hardly suspected. Before 1887 there had been but two presidents, Upjohn from 1857 to 1876, Walter from 1877 to 1887. Then Hunt, who had been secretary from 1857 to 1860, came in as president, and from then on the work of the Institute began its wide influence. This is not the place for a history of the Institute, but it is pertinent to indicate what the Institute has done for the profession, the building trade and the public in the last forty years. Of course this change in the Institute's activities was no sudden one, but a very gradual growth due to the fuller appreciation of what a great professional body should be, and it is therefore impossible to fix a date when the more active work began, but it is safe to say that architects in the seventies had very little practical help from the Institute, and gave very little time to its affairs. Now, with greatly enlarged membership, its activities cover the whole country, and a growing percentage of members work constantly for it.

The most disagreeable and in some ways the least appreciated task has been in the field of competitions. The owner, perhaps a committee, instituted a competition, sometimes it was a free-for-all scramble, sometimes it was for a limited number of invited competitors. The owner drew his program and judged the competition. The outcome was about what it would have been if the names had been drawn from a hat. Rarely were competitors paid. It was honor enough to be invited. The competitors spent much time and money. The owner bought a pig in a poke, caught perhaps by an attractive drawing. He could rarely judge the plan, and rarely knew whether or not the architect was competent to carry out the work. Probably no one subject that has come before the Institute has taken up so much time of individuals, of committees, and of the Conventions as this. For many years progress was unnoticeable. Now, at last, there is a reasonable standard and both owner and competitors have fair treatment.

This one thing has made a great change in architectural practice. McKim and Carrère built their great practice on buildings won, early in their practice, by competition. No young architect today could expect to start his practice by winning a competition; and with the standards established for architectural service, it is well for him that he cannot, for, without experience, he would fail to execute the work well. Competitions are much less common than they were and are generally confined to projects of sufficient importance to warrant the time and money necessarily expended in a competition. It is also coming to be generally recognized that the majority of projects, even the large ones, are problems that cannot be solved adequately through competition. Where the problem of plan and the use of the building is simple or normal, and the design of the exterior the important thing, competition is justified. This was the case with the recent *Tribune* competition, and this is true of the simpler types of public buildings. It is not true of schools, hospitals, or of any type of domestic architecture, nor of banks or office buildings. In all these the plan is not predetermined, is not founded on an established precedent, but must be studied in detail and over a considerable period of time, if a solution of the problem is to be reached. In all these problems it is the plan rather than its artistic expression which is the absolutely dominating element.

It is obvious that this cannot be done through competition. To draw up the program a solution of the problem must be made, and, in that case, the one who made the solution, if the problem as judged by the owner, is really solved, had far better execute the building and save the owner time and money. If he

draws a program without solving the problem, then he is not in a position to state the problem clearly, and the competitors will not know what the problem is. The result, and one which has often come about, is that the winner sits down with the owner to study the problem, just where they would have been if the owner had selected the architect without a competition. This one change in competitions has made a marked contrast between forty years ago and now. So much for one phase of the relations between the architect and owner. Now one may add, to this couple, the builder.

Building agreements were largely the result of the independent efforts of architects and builders to protect each from the other, with very little regard for the owner's interest. Blanket clauses in the architect's specifications were an attempt to make the builder do anything that the architect had forgotten, and these clauses the builder tried, naturally, to evade; and in all cases the owner paid. Now the Standard Documents, the result of many years of joint study, give a sure basis of agreement, and owner, builder, sub-contractor, material men, the architect and the engineer, are safeguarded and guided along the lines of the best practice. This result would have been impossible without the American Institute of Architects. The men who, without all these helps to practice, conducted their business under conditions of great difficulty, and yet found time to lay the foundation of all this work and give it to the profession, deserve a lasting gratitude from this generation, who are often inclined to take all these things for granted, without any understanding of the unselfish work which has made their practice so simple.

It is not only members of the American Institute of Architects who have benefited by the work done by its members. Architects throughout the country use the Institute and profit by the results of its work, whenever it is to their interest to do so. Where professional standards interfere with their methods they are, unfortunately, often disregarded. Engineers and builders have profited by the work of the Institute but in these cases they have themselves contributed to the result. It is much to be hoped that engineers, builders and architects may work in still closer relations for the benefit of the work in which the vital interests of all these are so closely interrelated as to make it impossible to separate them.

It is not easy for an architect practising under modern conditions to understand and appreciate how difficult it was for the earlier men. In a very true sense they were pioneers who blazed the way for our generation and made clear the path we were to follow. The writer belongs to that group, fast vanishing, which knew at least some of these pioneers, and we know how much the profession owes to Upjohn, Cabot, Ware, Cummings, John Sturgis, Hunt, all of Boston and New York, who in their day and generation practised architecture with honor.

R. Clipston Sturgis.

London Letter

THE LAST two months have been far from merry. In the first place, the climate has been abominable, with May like March and June like nothing on earth. Architects are of course too poor to go to the Derby and too busy to watch cricket matches which consist of waiting about under cover till the rain stops; but they do like their bit of sunshine, if it is only to see in the flesh the shadows which they cast on the office drawing board. They would not grumble however if a couple of strikes had not been thrown in to complete the gloom.

The general strike gave everyone an opportunity to take some exercise, and also allowed the "boss" time to sit in his office and really think about design, but the coal strike is a much more serious matter. Its results are not yet fully felt, but England is losing millions and the cost of everything, including that mercurial item of builders' supplies, the "light casting", is bound to soar. There is certain to be a stiffening of prices, and a falling off in work, followed by the spectre of an increase in the income tax.

London is, however, accustomed to these things, and phlegmatically continues its season, while on the art side there is no dearth of exhibitions, with the Royal Academy and Sir Frank Dicksee at one extreme and the Leicester Galleries with Jacob Epstein at the other.

As a carver and modeler Epstein is more interesting to architects than most English sculptors, as he has the architectonic quality, but he would rank in this respect behind men like Bourdelle or the Swede, Carl Milles, who hopes soon to exhibit for the first time in this country.

§

The Royal Academy show this year continues its tradition of reflecting the characteristics of its conservative leadership. The level of competence is high, the standard of imagination is low.

The architectural room still continues to be, primarily, an exhibition of water colors. There are three classes of exhibitors: (a) the Academicians and Associates, who naturally occupy a large proportion of

the limited space available, (b) the ambitious ones who hope to become (a), and (c), the ordinary average architect whose chances of having work hung or rejected depend largely on the success as a water colorist of the architectural renderer whom he employs. It is scarcely worth while from the commission standpoint to send to the Academy unless one has a drawing already prepared for some other purpose, but support of this show may be justified as an effort towards supporting the cause of architecture; the prohibitive cost of these special renderings and the necessity for their existence is, however, a great stumbling block, and a large section of distinguished men refrain from exhibiting at all.

This year the largest drawing is one of Selfridge's new premises, by Sir John Burnet & Partners and Graham Anderson Probst & White. It is an enormous sheet, showing what is already familiar to everyone, namely: the endless colonnade of this great store, but with a different spacing in the middle to mark the new central entrance. The perspective would have been just as informative at one-quarter the size and the fact that it is out of drawing would have then been less noticeable.

One of the pleasantest exhibits is a design by Hayward, Maynard & Farey for a "Main Road Inn". It is a very dignified example of the "pub", one to which you travel by motorcar for luncheon preceded by a "spot", but in its simple Georgian lines it escapes both the "Tudorbethan" and the "Arts and Crafty".

Sir Edwin Lutyens has produced a "Memorial to the Missing" for the town of Arras, in which his recent fondness for cubist masses seems to have outrun his judgment. It consists of an enormous triumphal archway built up in receding stages of cubes in each of which occurs a recess with a bell. The arch stands on a great plinth-like wall, with more cubes and bells in the form of pylons at each end. It is highly imaginative and refreshing, but unless restudied may resemble too much a design in children's blocks, and very expensive blocks at that.

A very pleasant design for the Gresham Hotel in Dublin by Robert Atkinson, a scheme for Cairo Cathedral by Adrian Gilbert Scott, studies for the Bank of England by Herbert Baker, and drawings by Raffles Davison of Sir Gilbert Scott's Liverpool Cathedral are amongst the most interesting major exhibits. In connection with the latter it looks very doubtful whether the redesigned central tower for Liverpool is going to be as fine as the original scheme. It has lost in character of mass, and its detail seems to run the risk of suggesting a much magnified example of Magdalen or a largish country church.

The domestic work maintains its high level, and on the whole, while no one sets the Thames on fire, the exhibits suggest that the standard of English architecture is improving and that the designs are better studied. Mr. Arthur Davis, in a criticism written for *The Builder,* places this improvement to the credit of the schools of architecture, whose influence is beginning to be felt, a belief which will probably *not* be shared by the boys of the old brigade.

§

The strength of the English schools at present lies in the individuality of their teaching. They are more or less in line as regards curriculum and examinations, but they each maintain their special ideals and character. Generally speaking, the five years' course with which is embodied six months of office practice is the prevailing system, but in Scotland, where apprenticeship has had a firm hold, the arrangement differs. The Scotch student generally works for three years in a school, and then for three years in an office with three nights a week at evening school. It is a method giving good results where the office practice is concerned, but would be difficult to apply in the less hardy south, where experience shows that the average student cannot stand the strain of combined office and evening work. It is interesting to note that even in Aberdeen the office pupil receives pay from the very beginning, even if his previous training is non-existent.

§

The question of Waterloo Bridge still produces reams of controversial correspondence, and the great public interest aroused has had the excellent result of moving Mr. Baldwin's Government to appoint a Royal Commission in order that the whole subject of the Thames bridges in the London area may be impartially and authoritatively reviewed.

This is the most sensible step yet taken, for there has been too much working at cross purposes. The London County Council want a new Waterloo Bridge which their trams can cross, the Bridge House Estates Committee of the City Corporation (*sic*) want a bridge at St. Pauls, while the Court of Common Council have very well grounded fears for the fabric of the Cathedral. At the same time there is a strong body of opinion in favor of a new bridge at Charing Cross, and unless the problem of London traffic—street, railway, and river—is first reviewed as a whole, no one will be satisfied that Waterloo Bridge has not been wantonly sacrificed.

It is worth noting that a group of French architects including MM. Bérard, Bruel, Chrétien-Lalanne, Defrasse, Legros, Lisch, Louvet, Remaury, and Schneider, have signed a letter recording "their hope that Waterloo Bridge in London, with its great artistic value, may be saved."

While the fate of Waterloo is in the balance, rumors circulate that it is intended to buy its masonry and re-erect it in America!

Perhaps color is given to the story by the number of historic buildings which have been sold within the last year or so for re-erection in the States. The first to go was Warwick Priory, followed by Agecroft Hall, then a fifteenth-century gateway from Parham Old Hall, while the latest of the series is the sixteenth-century Chantry House of Billericay, in which the Pilgrim Fathers assembled before embarking in the *Mayflower*.

Under the Ancient Monuments Consolidation and Amendment Act of 1913, the Commissioners of Works in England are empowered to schedule as ancient monuments those buildings whose preservation is of national importance, but there is an exception in the case of inhabited houses. In any event the commissioners seem to have doubt whether the Chantry House, even if it had been uninhabited, was of sufficient architectural interest to place on their list.

§

It would be interesting to discover just how well some of the old mansions stand the process of rebuilding. It is certain that our forefathers were no tyros in the art of jerry-building, as witness the discoveries which have been made in the work of restoring St. George's Chapel at Windsor.

Here it was found that the whole roof had been unsafe for years, because the entire vaulting rested on springers which should have been bonded into the wall, but which bonding Henry VII's workman had, in a fit of light-heartedness, omitted. So that there was no scientific reason why the vault had remained in position at all.

Further investigations showed that a number of the buttresses were merely dummies, and that half of one entire wall was in consequence unbuttressed. The whole of the work has had to be pulled down and rebuilt, and it is only just in time, for the walls had begun to buckle and the whole structure might have come down with the vibration from the next passing *charabanc*.

§

The award for one of the largest competitions of recent years, for the new Masonic Peace Memorial in Great Queen Street, has just been made public, and the drawings of the ten competitors chosen for the final competition have been on exhibition in the R. I. B. A. galleries.

The Memorial takes the form of a Masonic Headquarters, with a main temple to seat 2,000, a whole series of Lodges and offices, and all the subsidiary administrative and club accommodation.

The winners were Ashley and Winton Newman, and they quite obviously gained first place on the merits of their plan.

There was only one competitor from overseas in the first round, Mr. David R. Brown of Montreal, and his scheme was one of the few which had any special character of a temple or memorial. Some of the exterior designs, including the winners', would have served equally well as the expression of large municipal offices, while others looked like Art Galleries or Peace Palaces at the Hague.

Ten competitors were selected from an open eliminating contest, and each of the lucky ones received £500 for their final project. The standard of design and drawing was on the whole disappointing, with one or two brilliant exceptions in the matter of presentation. Some of the finalists blew their money against Walcot perspectives and some beautiful sheets of detail; the winners however had not only the smallest Walcot but presented their scheme in pencil on mounted tracing paper. No doubt there is something in the saying that if you look after the pence the pounds will take care of themselves. "X."

London,
July, 1926.

Played on a Penny Whistle

It has been possible to read, not so long since, an Introduction to *A Tale of Two Cities*, by Chesterton, in which he calls attention to the merry side of the Revolution. Probably Chesterton does not make use of the word merry but for a moment. He looks out through Dickens' eyes and catches a glimpse of that headlong joy in more destruction which children feel after the clatter and crash of the first breakage. Revolutions must be something like that. They are tragic for those things and those people that are destroyed but there must be a huge sensation of accomplishment on the part of those who express themselves violently and in new ways. Taking part in bringing things about is sufficient cause for joyous friendships.

Revolutions have been characterized as violent only in proportion to the amount of injustice that has precluded them. Building revolutions are hardly brought about because of injustice so may not be expected to be violent in their nature, but they are going on from generation to generation, rapidly or slowly and have in them many characteristics that are to be observed in political revolutions. The fifteenth century in Italy was, to be sure, almost violent but so was the repression of ideas that had gone before. One, of course, speaks of the fine arts; and it is upon the subject of fine arts, again, that the penny whistle undertakes a simple composition.

There are those who would say that violence is no

overstatement of some of the manifestations of art which have been brought forward but it is not of these manifestations that we would confer. One desires to consider those who are taking part and not the things that they do. There can be little profit or pleasure in counting the heads that fell when Robespierre raised his hand but whether this act aroused in him sensations of pleasure or pain becomes important. Possibly Robespierre is a bad illustration. He was not big enough to properly represent. Perhaps no individual was that, and one should contemplate the assembled mind of theose who stood about on a dark winter morning and watched with impassive eyes the dull ash of the thudding machine. Were they deeply joyous or was there in the air a dreadful seriousness? We are told of a certain elation but that is hardly enough to express fundamental emotions.

One is not called upon to admit all revolutions are for the best but many will agree that out of this one came more of good than of bad and that more people today are better because of it than those who are not. If this is true it is important for us to have an opinion as to whether that good has come from the deep reasoning of the earlier assemblies struggling to correct injustice by lawful means or from that unharnessed rush which swept away and destroyed the well built barriers of centuries.

But, goodness! This is much too serious, and the words are getting so big that they are quite out of hand. A penny whistle cannot play chords.

The point is, did they take themselves very seriously, or did they have a good time doing it? Did the one who was accomplishing destiny by following high thoughts of a future generation make that generation better off or was it the whooping crowd who broke the wine casks, did outlandish things and liked one another for the very originality of their methods of destruction? It is possible that the aristocrat did not distinguish; but most of us prefer being thrown out by a bouncer to being fined by an upright judge. It is a nice point to be decided, but it seems probable that the surest changes are brought about by those who thoroughly enjoy the process of change.

How about these young sculptors, painters, writers and even a few architects? Not their works but themselves? We have been told that their works are bad. Bad drawing, bad craftsmanship and bad thoughts. Probably that is all true, although they have a right to say that it is a matter of opinion. But how about themselves? It is a very curious thing but the fact is that there are crowds and crowds of them spoiling good paper, good canvas, good clay, and we regret to say it, good building materials; and, the dreadful part of it is that they are glorifying in what they do. One can see them at work. Hacking and splashing and laughing and saying Oh Gosh! to older and more experienced heads. Vulgarity and rejoicing and freedom from all old restraints; but there is a suspicion that they are deeply happy and, worse still, that they like one another.

Gentlemen, did we do that? Surely, this is Revolution.

ORPHEUS.

Authority and Liberty in Architecture

In the September issue of the JOURNAL there will begin a series of five articles from the pen of Arthur J. Penty. The general title is that announced at the head of this brief notice. The titles of the five articles are as follows: I. The Gothic Revival. II. The Vernacular Movement. III. The Arts and Crafts Movement. IV. The Classical Revival. V. The Outlook. These articles should prove of the greatest interest to readers of the JOURNAL, for they are already familiar with the writings of Mr. Penty, who is not only an architect but a very profound student of history in those social and economic aspects which leave their inevitable mark on buildings. While the articles are written from an English point of view, every architect will find them full of the simplest applications to architectural development in the United States.

Thoughts About Art

"Among the many complexities that have transpired in the evolution of the present social order is the changing nature of artistic criteria and the more limited nature of æsthetic service. At one time art was the direct outcome of the needs of man for inter-relationship with forces governing his conditions, and, indicative of strongly felt social emotions directed to functional service, found the special channels for expression which handed, down the ages, the traditional form of dance, ritual, drama, architecture—the national heritage of mankind. But the relative values in life are changed. We are less simple and direct; language has become a dictionary of faded metaphors, art a process of ornament added to decay; symbols have lost their original significance and the fundamental basis of tradition is obscured. . . . The language of the emotions expressed in arbitrary and unintelligible symbolism bewilders public and critic alike who are at a loss for some 'æsthetic plumb-line' and the distance between the artist and the public perceptibly widens, for every picture cannot tell its story in terms of ideas associated with objects, although the general determination is it should."

GRACE ROGERS, in *Artwork*.

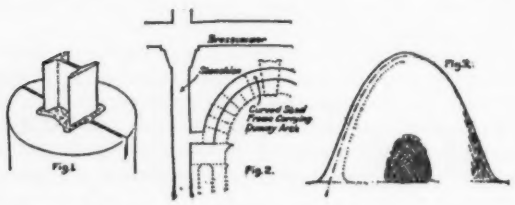
Traditional Architectural Forms and Their Structural Efficiency[1]

BOTH architecture and structural engineering are concerned with the design of buildings of sufficient strength and endurance for the purposes they are meant to serve, and both architect and engineer may, with propriety, improve the artistic effort of their structures by choosing the elements of which they are composed, and assembling them in pleasant forms, without the sacrifice of efficiency. Architecture and engineering part company in practice at the point where masses of material, unnecessary for the strength or convenience of the structure, are added by the architect for purposes of ornament, or where the engineer's structurally sound framework is so designed that it only satisfies the conditions of stability, and is built with an utter disregard of appearance.

Greater harmony of effort ought to exist between works of architecture and works of engineering, which have to exist and be seen together under our modern conditions. One serious stumbling block in the path of unity is the architect's adherence to ornamental and even structural forms originated in the distant past which have little or no reference to present-day methods of construction. In some few instances the ornamental traditional shapes which have been dragged by the architect out of their graves in the ruins of Egypt, Greece, or Rome afford some practical advantages to compensate for their additional cost and weight; in many other cases they are useless, or even disadvantageous and structurally dangerous.

The stone or marble casing in the form of a column which encloses a steel stanchion may protect the metal from decay by rusting or from the effects of fire; or, by insulating it more or less efficiently, may preserve it from changes of temperature or accidental blows—always provided that the casing is applied in an effective manner (Figure I.) This excuse cannot be claimed, however, for an ornamental stone arch introduced in a steel-framed building where an additional weight of steel falsework has to be elaborately built up to an arched outline to support the dummy voussoirs. The extra complication of parts involves an expense not warranted by the structural necessities of the case, and amounts to a slight defect from the practical point of view. From the aspect of sound art such an arrangement is even more pernicious, for dummy productions are inevitably pretentious, dull or both. (Figure II.)

Supposing, however, that the architect resolves to abandon shams, such as stone arches suspended upon a steel framework, and confines himself to genuine masoncraft, he at once finds that the fetters of a past style restrict his designing powers. The engineer building a masonry railway bridge or viaduct feels free to design the curve of the arch in the most suitable manner to support the loads and to meet the conditions of headroom, fairway and gradient. Even if he does not design on catenary principles, the hyperbola and parabola, and various cycloidal curves are at his disposal, as well as the semi-circle and the ellipse. The unfortunate architect is confined to the use of certain traditional shapes on pain of appearing unconventional, and this limitation certainly does not make for sound construction.



Architectural forms have become established on a basis of tradition rather than of reason, and the origin of the tradition may date back to the primitive experiments of a semi-savage people. Strangely enough, the savage originators of arched construction seem sometimes to have produced forms of great structural merit. The thimble-shaped mud hut and the arch curved to the contour of the small end of an egg are to be seen in Egyptian and Babylonian structures, and such buildings must have utilized the compressive strength of the material to a highly satisfactory degree. As long as such arches and domes are erected with the curve of their contour springing from a solid foundation, they approximate to the ideal shapes for arch structures, and in them rule of thumb and rational theory take a parallel course (Figure III). The desire to elevate the arch upon a vertical wall, or pier, in order to provide increased headroom without increase of span, introduced into architecture a most pernicious and unconstructional type of design. Instead of the axis of the material construction following the line of arch thrust and rising in a regular curve from the foundations to the crown of the arch, it departs from that curve in what is really an exterior bulge near the top of the vertical pier (Figure IV.) In a masonry construction the effective arch action begins at a point X far underground where the pressures obtain a foundation and abutment. S indicates the approximate natural line of pressure, and R the architect's line of resistances. The spaces AA^1 between the line of pressure and the line of resistances increase as the building distorts under its load. The distortion S′ in the building automatically moves the natural line of pressures into a series of positions less and less favorable to stability. Hair cracks C in the pier and arch are signs of disintegration of the masonry produced as a result of the long, continued movement.

A simple practical test illustrates the evil effect of this traditional architectural form, for a model made of damp clay or plasticine or of uncemented blocks of wood or cork will show in a comparatively short time that the arch tends to become depressed at the crown and to spread at the haunches, while the piers tend to overturn outwards at their tops. The whole model, in fact, alters in shape,

[1] Excerpts from a paper in *The Engineer*, London.

and although the material of which it is constructed affects the nature and the extent of the alteration to a slight degree, the direction of the movement is consistent in the main, whatever material is employed. Given a plastic model of a semi-circular arch raised upon vertical piers, the effect can be produced by simply leaving the model to sink under its own weight without additional pressure. Models of loose blocks may not produce such fluent curves, but the sliding and tilting of the blocks upon their bed joints corresponds remarkably closely to the distortions and flexures of the plastic model.

Some important inferences may be deduced from this constant action of composite architectural forms consisting of arches and vertical piers. First, as regards the natural forces of gravitation, an arch must be considered to begin its ideal line of thrust at the level at which it finds solid foundation and abutment, and this level may be deep in the earth below and beyond the artificial foundations composed of masonry or concrete. Movement or yielding in the earth base affects the arch as a whole, allowing its crown to descend and its span to increase. In an ordinary architectural "arch-on-piers" construction, it also permits the piers to hinge and rock, and hastens the deformation of the whole.

In the second place, wherever the centre of resistance of the material of which the arch is formed lies to one side of its ideal curve, movements are liable to take place in the same direction. Each successive distortion not only adds to the total deflection, but accelerates the production of further movements. A clear illustration of this tendency of the masses to move in certain definitely recognizable directions may be obtained by means of a model arch composed of a series of hollow voussoirs arranged to lie with the ideal line of thrust passing through the hollows in the voussoirs. The pressure of the arch soon makes its effect apparent in the distortion of the hollow voussoirs, which tend to compress and flatten in the direction of the line of thrust and to elongate in a direction normal to it. A model of an arch with hollow voussoirs is indicated in Figure V. The material tends to spread outwards at A A and to compress at B B. In the case of a plasticine model which was kept under observation, the descent of the crown took place at the rate of 1/32 in. in four days under the action of its own weight alone.

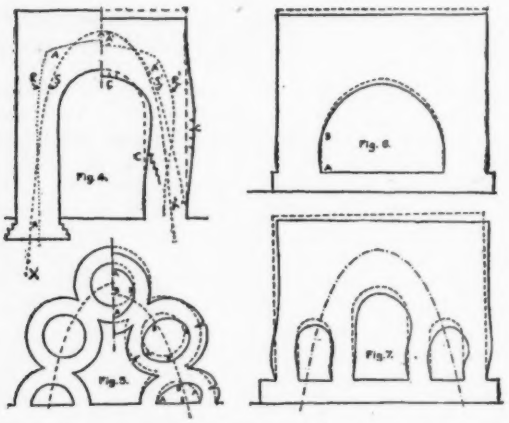
Both models and full-size buildings erected to the traditional architectural forms show progressive distortions of a consistent character in accordance with this rule. If the architect has provided masses of material in positions upon one side or other of the ideal line of thrust, these masses inevitably tend to drift further and further from it. Nature seems to reject the ill-placed material, and in process of time the piers and buttresses of an arched building are found to have become bent in every part in accordance with the internal stresses set up by the arch pressures. These delicate curves may be seen quite easily with the naked eye at Westminster Abbey, particularly in the great central piers, and less distinctly at St. Paul's Cathedral, where the architectural mouldings and carvings obscure the outline of the piers to some extent.

This little-understood tendency of imperfectly shaped arches to move slowly towards their fall has an important bearing upon the design of new buildings, but the tendency is still more harmful in old buildings which have already undergone considerable distortion in the course of centuries and are already in a weakened state. It is therefore vitally important that the custodians of old arched buildings should be aware of these consistent movements which are easily comprehensible when once their origin in imperfect arch and buttress design is pointed out. The fall of an important historic monument is not a matter of frequent occurrence, but whenever a great arched building does fall, the event comes as a surprise not only to the public, but also to the custodian for the time being, whose duty it is to uphold the structure by shoring or other means and to keep it in a state of stability.

England is rich in fine Romanesque and Gothic cathedrals built during a period of 400 years between 1100 and 1500 A.D., and many of them include high and healthy central towers built upon piers and arches at the intersection of nave and transepts. Practically every one of these towers is really undergoing at the present moment a very slight and slow, but continuous and progressive, distortion in accordance with the adjustment of the masses of material under the arch pressures. These distortions must inevitably be accompanied by the weakening of the material of which the piers are built, and the ultimate fall of each tower is only a question of sufficient time. Many of them have already endured for several centuries, and their periods of stability must be drawing near their end. In the case of the Chichester Cathedral tower, the indifferent lime and rubble concrete composing the interior of the piers was blamed for its recent collapse.

The part played by progressive distortions and adjustments in the imperfectly designed and imperfectly buttressed arches has not hitherto been recognized, and the exact analysis of pressures in the complex arrangement of piers, arches and buttresses which compose a typical Gothic cathedral is an affair for prolonged and unremitting study. The preliminary stages of such an investigation may be made and useful ideas as to the principal tendencies of the building obtained, by the use of models which will show how the composite arrangement of small arches across the aisles combines with the high vault across the nave to form what is really one composite arch rising from dual foundations on each side of the axis of the building. The model illustrates the fact that the pier and buttress, which stand on the inner and outer side of the aisle respectively, are subjected to stresses which cannot be simply expressed by the commonly accepted architectural explanation, "the pier takes the vertical weight and the buttress resists the thrust." The model shows, in fact, that the two supporting members, the pier and the buttress, are each taking a share of loading of which the effect, in weight and thrust combined, would have been brought safely to rest in a symmetrically designed foundation had the composite arrangement of arches, piers and buttress been replaced by a single well-designed arch ring of suitable curvature.

The comparatively simple form of a Roman triumphal arch resembles the section of a Gothic cathedral in its arrangement of one large and high arch with a smaller and lower arch upon each side, and the effect of pressure is well illustrated (Figure VII.) This engraving shows



the original outline of a plastic model of a triumphal arch in relation to the outline assumed by the same model at a later stage when its natural distortion has become pronounced, but before collapse has taken place. Although, architecturally speaking, there are three arches, the distortions take place with reference to an imaginary single arch indicated by the chain-dotted curve. The line of pressure is forced to divide into two components above the crown of each subordinate arch, and produces curvature in all the four supporting piers. As was seen in the case of Figure V—the arch with hollow voussoirs—the supporting masses which lie to either side of the ideal simple line of thrust have moved still further away from it, and the piers which are supposed, according to the old theory, to be "bearing the vertical weight," are found to be bent as well as the buttresses, or exterior piers, which were admittedly taking the lateral "thrust." The inward direction in which the piers are bent is noteworthy, for it is characteristic of the deflection of the piers in most Gothic cathedrals that have been provided with a high nave and low aisles.

The benefit of disposing the masses of material more nearly in accordance with the ideal single thrust line is shown in Figure VI, which illustrates a model of the same size as that shown in Figure VII, but having two instead of four piers and one arch equal in span to the three spans of the triumphal arch. Very much less subsidence and distortion are produced in the same time. The distortion would have been still less had the supports not been vertical from A to B. Not only is the distortion less, but it is of a simple instead of a complex character.

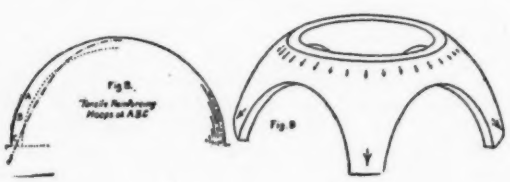
In most Romanesque and Gothic buildings the supporting members are extremely attenuated in substance, and the effective bearing area of piers, walls and buttresses is often still further reduced by the unequal bedding of the external casing of wrought stonework, and the more compressible rubble concrete with which the interior is filled. The effect of excentric loading in reducing the safe allowable unit load upon a steel stanchion now receives the attention of all structural engineers as a matter of course, and this far more complex and dangerous distortion of heavily, excentrically and obliquely loaded masonry piers should no longer be completely ignored by the custodians of our cathedrals. At one Gothic cathedral which has been found to be distorted and cracked in many parts, a grouting scheme has been put in hand before any complete survey has been made to ascertain the connection of arch pressures with the direction of movements.

The suggestion of an earthquake as the cause of cracks and distortions really begs the question, for the cracks produced in a complex arched building by any earthquake of insufficient force to cause its collapse will take place in the same positions as cracks occurring in the course of years or centuries under the influence of the arch pressures without the earthquake. In 1908, the author measured the domed Mosque of Eski Serail, Salonica, where the distortions, attributed to the effects of earthquake, are most interesting, as showing the interplay of arches, domes, pendentives and semidomes mutually supporting and partially and imperfectly buttressing each other's thrusts. The building, with its central span of 20 ft., is small compared with our cathedrals, but takes an intermediate position between a large building and a model. The consistent yielding and bending of all parts under the arch pressures would be represented faithfully by the behaviour of a plastic model settling under its own weight, though artificial rocking of the baseplate of the model to produce a miniature representation of an earthquake would undoubtedly accelerate the action.

Given an arched building of ordinary architectural form, with the arches elevated upon vertical supports, the inherent defect due to the departure of the line of resistances from the ideal line of thrusts is so grave as to dominate almost all other causes of decay. The characteristic distortions of the supporting and buttressing masses are seldom or never suppressed and are almost invariably increased by other accidental sources of damage. The failure of an arched building, almost without exception, takes place in relation to the action of its arch thrusts. Thus, a weak foundation permits a buttress already subjected to overturning moments to move and overturn more freely by hinging at the base.

Wind pressure increases the effects of arch thrusts upon one side of a building, while diminishing them upon the other, and the fluctuations in stress carried on over long periods undoubtedly have a pernicious effect upon the strength of the material, and consequently upon the distortions of the masses, since every stage in the decay of the supports is both preceded and followed by stages in the descent of the arch.

Vaults and domes of the usual architectural forms when elevated upon vertical supports share with arches some of their tendencies to cause continuous and progressive distortion in the structure. A dome is a particularly stable form of building, in that its broad continuous band of base receives its load and lateral thrust in distributed form, and its circular plan also affords an opportunity for



the introduction of an effective tensile chainage or series of metallic hoops (Figure VIII.) These advantages have to be foregone, however, when the dome surface is penetrated by arches, and the diffusion of weight and thrust is again concentrated on their springings (Figure IX.) Those portions of a domical surface which descend in the shape of spherical triangles between the haunches of pairs of arches meeting upon the top of a pier or column, and which are known to architects as "spherical pendentives," are just as dangerous as an unbroken dome is stable. Even supposing the weight of the dome or drum built above the pendentives to be received by them in the form of a diffused vertical load, as it may be if these architectural superstructures are effectively chained, and no breath of wind is permitted to blow, the resultant thrust at the foot of each pendentive is not only a concentrated load, but reaches the support in an oblique direction and demands an extraordinary amount of buttressing to ensure stability.

A model of a spherical pendentive supporting a loaded drum and elevated upon vertical piers proved most instructive on this point. The model was made of clay and supported a heavy load for several weeks with a slight and continuous bending of the supports at the springing. Cracks which opened at the points of convex curvature were repeatedly filled in with moist clay, a process similar to "grouting" in practice, but persistently opened up anew. After two months of extremely gradual decay, the model suddenly collapsed, although the load had been removed when the signs of movement and distortion became noticeable. In its very slow failure and its momentary fall, the model indicates with undeniable accuracy the fate of many an ancient building in which traditional architectural forms have been employed without sufficient regard to their structural fitness. Comparatively insignificant distortions and fractures transformed the model from a compact frame capable of supporting several pounds' weight to a dilapidated and weakened structure incapable of supporting itself, and this same degradation of the strength of a structure goes on in the full-sized building in the course of centuries.

In some advanced cases of decay it is possible to measure the actual rate of movement when one part of a building remains approximately stable and other parts are drawing away from it; but, in general, the movements are so slight and affect the building in such a consistent and harmonious fashion that they elude observation. Patient analytical surveys are needed if the effects of time and the efforts of curve-loving architects are to be differentiated from one another in the case of any particular monument. Every distortion and fracture must be charted and the behaviour of loaded models studied in order to see whether such distortions are likely to be produced under the conditions of shaping and loading to which the building has been subjected. WILLIAM HARVEY.

Nationality and Architecture

The revival of the Irish language has been made the corner-stone of a national renaissance in this country. It is held to stand for a national culture and to be the appropriate vehicle for an expression of our own ideals. Let us provisionally accept this view and agree that an understanding and appreciation of our Gaelic heritage should form the basis and stimulus for a truly representative national consciousness. Can such a consciousness conceivably stop short at literature? It is surely obvious that the other great arts must play their part; and before we can discuss what that part ought to be we must understand broadly the difference between language—the written and the spoken word—and the universal "languages" of architecture, music, painting, and sculpture.

Language is a specialized technique whereby the writer or speaker plays upon the experience and knowledge of the reader or listener: "The craft of the Writer consists . . . in manipulating the contents of his Reader's mind."[1] Admittedly the "style" in which the message is cast is so closely identified with content that the message and its expression must be judged as an artistic whole. Fundamentally, literature exists as a pipe to transmit thoughts or facts, and the form of the pipe is its style; but language can only become articulate through the local symbols of words. It is otherwise with the other great arts, since these are universal languages that require no translation to put us in touch with the actual medium conveying the message, although the message itself, as can happen in books of which we read the words easily enough, may remain unintelligible to us.

Whether we like it or no we are faced with certain definite facts: first, that it is difficult to persuade or compel the vast mass of people who have been accustomed to talk English to learn a difficult language; secondly, that English is itself a fine language with an almost unequalled literature. In basing a culture upon the revival of Gaelic we are setting about a task of great magnitude, and one that nobody would wish to press home to the extent of sacrificing access to the literature of England and America. But let us again agree that the task is worth the effort. On this assumption we can insist *a fortiori* on the urgency of inculcating an understanding of the other arts, arts at least as important culturally as literature, but the reintroduction of which would not entail the great primary effort of mastering a new vehicle of technique. One uses the word "reintroduction" advisedly because a popular knowledge and appreciation of architecture, with which we are principally concerned, is as moribund in Ireland as it is in England. Let us face the truth and say that the average educated Irishman is as completely ignorant of the elements of architectural quality as is the Englishman. We have seen that the English language is a rich one, and in using it we have at least an adequate range and means of expression. The bulk of our recent architectural expression, on the other hand, in its setting of soot and advertisements, is an offence, and all that is worst in it is not the creation of architects but is derived directly from pre-war England. Irish architects have had to fight their architectural battles in an atmosphere of definitely bad public taste and preference; they have had, and still have, to watch those who have had no training and are not architects, who understand construction, but know nothing of architecture, building to their own designs, to suit their own

[1] *The Handling of Words.* By Vernon Lee. John Lane, London.

tastes (or those of prospective purchasers as ignorant as themselves), desecrating the serenest spots in the country.

One will inevitably be told that "tastes differ" and that architecture is a matter of personal preference. If this be so, how comes it that in every art we find creations that outlive the centuries and always appeal to mankind while the thousands of their successful contemporary rivals have perished? Is it a matter of taste to decide the relative merits of the Humpty-Dumpty pantomime and *Othello,* or the music of Mozart and Monckton? Admittedly there exists a vast field between such extremes where individual preference may be exercised, but the general conception of architecture, both here and in England, is unable to distinglish between the tolerable and the definitely bad. Until the existence of genuine art values is acknowledged, it is difficult to see how we can attain any culture worthy of the name. Even when the public is faced with a large modern building of strength and simple dignity, like the National University, it evokes either criticism of detail or its very virtues are cited in its condemnation. The educated public can supply exceptions—exceptions that test the rule and prove its general application.

In suggesting that this vast barren tract of intelligence might be brought into æsthetic and national cultivation through architecture more readily than through language, we base our argument upon the universal application of the language of architecture, and it may be asked how such a vehicle of thought can be truly national. The possibility of attaining to a supreme national expression in architecture is illustrated in our own day in the work of the modern school in Scandinavia, culminating in Ragnar Ostberg's Town Hall at Stockholm, one of the world's outstanding achievements. But the Scandinavian national character is shown, not only in the larger buildings, but in the quiet dignity of the farms, cottages, and factories of Denmark and Sweden, forming as they do an appropriate setting to an intense national culture and (which especially concerns us here) a symbol of pride and efficiency in home, farming and coöperation.

If we search for the source of national quality or flavor in architecture, we find it closely interwoven with craft work, the idiom of the hand, proceeding from a corporate search for fitness and beauty, an attitude as far removed as possible from that existing here where the hall-mark of "taste" among cultivated persons is a veneration for anything that is optimistically believed to be "antique." Those who practice modern craft work in this country must either rely on an insignificant patronage, or bury their creative talent and turn into copyists—euphoniously styled "reproductionists." Is there any demand in Dublin for an Irish twentieth century chair? Are not even our umbrella stands labelled "Georgian" or "Jacobean"? We can learn our lesson from the Town Hall at Stockholm which has not slavishly followed a supposedly old Swedish style; the architecture contains much that is Swedish, Russian, Byzantine, Venetian, and it is ruggedly personal, but it has achieved its racial distinction through the combined skill of every form of Swedish craftsman. Nothing of the antique exists in the building, with the exception of a few tapestries. Mosaics, tables, chairs, carpets, even the match-box designs are modern, carefully thought out, rooted in traditional soil, and exquisitely in keeping.

The French, in last year's International Exhibition of Decorative Art, forbade all reproductions of the antique, whether in buildings or exhibits. Their attitude, and that of every reasonably-minded modern artist, being dictated, not by a lack of veneration for the past, but because we are not the past, and we can never get any living art by pretending that we are. Purely revolutionary changes defeat their own ends; salvation can only be discovered in a spontaneous interpretation, based upon national tradition in so far as it can be transformed and adapted to present-day requirements and aspirations.

If we were to entertain a cultured Dane or Swede, he would at once ask to see our new architecture, and for one real piece of architecture he would behold dozens of "London suburban" villas, bungalows, stereotyped shops, hoardings, and flaunting advertisements. He would ask to be shown examples of modern craft work, and we could introduce him to some excellent productions, more especially in stained glass; but he would at once realize that the work resulted from the enthusiasm and determination of a handful of individuals and had no adequate public backing, knowledge, interest, appreciation, or support.

Our architects, furniture designers, and craftsmen generally, even our shops, are seldom allowed by the public, their clients and patrons, to undertake legitimate experiments in design, craft, or color. They are bound down and tied by the principle of "safety first"—"do what the other man did"—a principle that encourages and demands the reiteration of lifeless platitudes, mock antique replicas, or gimcrack decorations imported from Peckham, Balham and Tooting.

It may be questioned what the Government can do to foster this wider form of culture, and one can only suggest that every effort that it makes to revive the national language should, through the same channels of education and propaganda, have its counterpart in an equal determination to improve our national and civic consciousness of architecture and the sister arts. It should control individual enterprise where it is irresponsible, self-seeking, and contrary to the public amenities. Until we coöperate to introduce, train, compel, this national consciousness, we can never exhibit our country with pride to the stranger nor be in a position to develop and enjoy it ourselves.

MANNING ROBERTSON, in *The Irish Statesman.*

To Think or Not To Think

From the little journal of the British Institute of Philosophical Studies the following is taken. The words parenthesized in italics perhaps illustrate the direct bearing of the statement upon architectural questions:

"Reflective people (*many architects*) everywhere are looking for guidance in the maze of thought and practice in which they find themselves. It would be fitting if the required direction were to come from Philosophy, whose aim is to see life steadily and to see it whole.

"In general, it may be said that Philosophy is an at-

tempt to discover comprehensive truth about the world as a whole, and its method is both critical and constructive. It may never completely succeed in its quest; but even if it does not, the principle which governs it of bringing all ideas and beliefs to the bar of reason and consistency, and of taking account of the whole of experience, will always be of great service to knowledge.

"Many of the conceptions in common use have been forged under the pressure of urgent practical needs to enable man to interpret his experience. Consider, for example, the expressions 'thing', 'substance', 'change', 'motion', 'cause', 'mind', 'self', (*'building', 'architect', 'practice', 'competition', 'free', 'service', 'legitimate', 'right', 'ethical', 'labor', 'cost'.*) These terms are freely employed both in common life and in science, yet it is safe to say the majority of people would find it difficult to define exactly what these conceptions mean. Now it is obvious that if we do not understand clearly the meaning of the concepts we employ, and the relations subsisting between them, we are bound sooner or later to fall into serious error. It is therefore plain that Philosophy is performing an important duty when it submits such concepts to thorough analysis and carefully defines their meaning. Another important task which Philosophy is called upon to fulfill is to counteract the tendency of the human mind (*or architects*) to be satisfied with partial explanation (*of architectural experiences*). By reason of our absorption in some aspect or other of life, we are inclined either to deny or at least to overlook other aspects which have a claim to be taken into account. . . .

"Not the least important service of Philosophy is its application to the social life (*the relation of architecture*) to men. We may agree with Plato that in the civilized world every form of society is in danger of perishing as much by its inherent defects as by external assault. Modern civilization (*architectural practice*) is faced with problems of reconciliation (*between the rights, for example, to build taken by individuals against the welfare of the whole*) as great as those which were unsolved by the ancient world, and the issue is in balance. The question which must be answered is whether the prevailing social thought of our day is competent to solve our problems, . . . and it can be said with confidence that no social philosophy would prove adequate to meet the situation which did not take account of the first principles of Ethics.

"Philosophy must be regarded as connected with the goods of the mind (*the spiritual results of all building upon all men*) which are as important as the welfare of the body (*comfort*)."

Exhibition of Water Color Drawings of Old Bridges in France[1]

THE exhibition was held at the galleries of the R.I.B.A. in London, and was opened with the following address:

THE RIGHT HON. THE EARL OF CRAWFORD AND BALCARRES: This gathering is brought together to see a remarkable exhibition, which illustrates in this branch of art the almost incredible wealth of the French Republic. Every type and style of bridge is represented —the Pont Du Gard, that astonishing bridge in the South of France with Roman terminal archway at either end, and the Albi bridge at Cavaillon, and the bridge with the great pilasters over the small canal at Toulouse. I think it is a very interesting fact that the French, who possess this marvellous collection of bridges, should have arranged, by the coöperation of Professor Emerson and others, to produce a work in our language illustrating this branch of architecture. I am told that Professor Emerson's book is being largely purchased by engineers in the United States of America; that is a very interesting and a very significant fact. I sometimes wish that our engineers took more interest in the æsthetic side of architecture, just as engineers are alleged to wish that architects took more interest in the engineering problems. However, the United States' engineers show a praiseworthy interest in the æsthetic value of bridges by having ordered a large number of copies of the book.

But to us the interest of this exhibition is by no means confined to the purely æsthetic values, as shown in this remarkable series of water colors and measured drawings. We wish, if possible, to apply the moral to ourselves. I do not think that, in this country, any of us would claim that we possess a series of bridges so remarkable for antiquity, for variety, for ingenuity and for resource, as that by which we are surrounded, but at least we have got our own heritage. I hope that a result of this exhibition will be to draw attention to what, I suppose, may be called one of the most romantic features in architecture—romantic, of course, because a bridge is about the only building in which it is not necessary for the architect to place a room, which must be very consoling to the architect. But though our wealth can scarcely rival, or even correspond with, that of France, we have our own bridges, and in this country, I think our bridges are more threatened than anywhere else on the continent of Europe. The new demands of motor traffic place upon county road surveyors and their committees a very facile temptation to remove or to mutilate old bridges and to replace them by others more convenient for fast motor traffic, or for heavy wagons. In some counties striking efforts are being made to avoid this disaster. Herefordshire is a county exceptionally rich in small bridges of the seventeenth century; and their

[1] *Old Bridges of France.* By William Emerson and Georges Gromort. 23 Water Colors by Pierre Vignal. 35 Black and White drawings by Louis C. Rosenberg and Samuel Chamberlain. 44 Measured drawings and maps. Press of the American Institute of Architects, Inc., New York City.

county council and their road surveyors are taking special care to preserve them, and still more to prevent their mutilation and destruction in order to add facilities to motorists. The Ministry of Transport has shown itself most friendly in trying to preserve our old bridges; in some cases they have gone so far as to duplicate the grant offered by local authorities from the Road Fund which the Ministry of Transport controls, in order to prevent the loss of an old bridge. We cannot exaggerate our debt of gratitude to the Ministry of Transport for its good offices in these matters. There are other bridges towards which I could wish the Ministry of Transport might be inclined to show a little more activity, namely, the Bridge of Waterloo, which, although modern, can, for its grandeur and its statuesque lines, compare not unfavorably with some of the most famous and characteristic bridges of France.

I hope that this exhibition, interesting in itself, will have a repercussion in so far as it affects our own problems at home. There is a strong movement afoot, to which, I am glad to say, our President is contributing from his fund of experience and from his position as President of the Institute and from his large knowledge of men and affairs—a movement to try to unify, to coalesce, and therefore to strengthen all those societies and movements, of which there must be a large number, the object of which, in one form or another, is to preserve the beauty and amenity of our country. One of the objects clearly is to maintain our bridges, certainly one of the most charming elements of architecture, something which joins one county to another, one side of a little stream to the other, which is like a beautiful marriage. A beautiful bridge is, and should be, preserved intact for all time. But let me add this, in conclusion: We shall not preserve our ancient bridges in this country, or our old churches, or our old buildings, or the natural beauties of our countryside, without a great and sustained effort. Public opinion today is, I am sure, more sympathetic, more ready to do the right thing, than at any previous moment in our lifetime. But, at the same time, the forces of danger are more powerful, are better equipped, and in some ways (shall I say?) are more unscrupulous than ever; and we are now approaching the time when in this country we have got to have a stand-up fight against the forces of ugliness. We have got to equip ourselves efficiently and vigorously for the campaign which is about to open. We can enter upon that campaign with the knowledge that our cause is good, that nobody dares to oppose us, but that, none the less, through ignorance, through apathy, through neglect—often through neglect of our own friends, these dangers are imminent, and, unless strongly opposed, will win the day through error or omission on our part.

I am particularly glad that this exhibition should take place here, not merely because the works are charming as works of art, but because it is good that such an exhibition should take place under the auspices of the Institute, still more, under the guidance and direction of Mr. Guy Dawber, who, as I say, is taking an active part in a movement which will be fruitful in this country, which will not merely tend to preserve the bridges which we have inherited and of which we ought to be proud, but which will go very much further and do much to preserve the beauty of the countryside as a whole.

THE PRESIDENT, (MR. E. GUY DAWBER): I am sure we are all very much indebted to Lord Crawford for his interesting address. I thank him for all the kind things he has said about the Institute, and with regard to what the Institute is going to do in the matter of the preservation of rural England. It is a subject which I have very deeply at heart. The subject with which we have to deal today, however, is this exhibition of pictures of bridges of France, for the collection and arrangement of which we are indebted in great measure to Mr. H. M. Fletcher. I hope it will become thoroughly well known and advertised, so that all our members will be able to see it, and not only study the beautiful water colors, but also the charming measured drawings. I quite agree with what Lord Crawford said, that we in England have not such magnificent examples as the French bridges, with the exception of Waterloo Bridge; but in England we have a unique collection of smaller bridges many of which, with the present movement for widening roads and making new great arterial roads, will have to be sacrificed. We should therefore get up some campaign by which our local societies affiliated to the Institute might have all the bridges carefully measured and catalogued. For instance, there is one that we can all call to mind, the delightful pack-horse bridge at Haddon Hall. I do not think that has ever been measured or published. There are many in Herefordshire and Berkshire, and several in Norfolk. We can all call to mind these small bridges, and I throw out the suggestion that drawings might be made of these small bridges throughout the country, before they are destroyed.

From Our Book Shelf

The Romance of Design

In an article in the New York *Times* of 15 April, Mr. John Cotton Dana, the well-known librarian of the Newark Public Library, writes with penetrating insight on the subject of the renaissance in design in connection with machine-made products. He points with just approval to the work of the Metropolitan Museum in New York City where steps have been taken to give emphasis to this renaissance. The volume[1] before me is eloquent testimony indeed of the conclusions of Mr. Dana. Devoted as it is very largely to the work of design in the field of textiles, it covers the history of this art in a most comprehensive manner. Profusely and exquisitely illustrated, it carries the reader on a journey that he cannot but enjoy, for he will find himself face to face with the restless spirit of man, seeking to express his fancies, his delights, his emotions, wandering up and down the earth, from port to port, over trail and caravan route, in the palaces of kings, in the workshops of all the ages.

If plagiarism is the art of welcoming the ideas and expressions of other lands, who shall complain of the manner in which these influences made themselves felt as

[1] *The Romance of Design.* By Garnet Whitney and Horace B. Cheney. Doubleday Page, New York, 1926.

trade and commerce vied with each other, as craftsmen responded to the seemingly endless demand for things of beauty with which people wished to surround their daily lives. It may be that the machine can, under a right relationship, restore some of this quality of homely beauty to even the trivial accessories of modern life, from which the competitive system has so largely torn them away. *The Romance of Design* makes out a good case for such a hope. If it errs it will be in the emphasis it has laid upon commerce rather than upon craftsmanship; but the reader will be amply repaid for the time he will spend in conning these pages. C. L.

Roman

At times one wonders whether or not architecture is so stern a taskmaster as some writers would have us believe. Surely, it seems, architectural scholarship ought to be graceful and easy, not stiff and pedagogic, and yet how often pedantry casts its dull shadow over the pages of history. Commendatore Rivoira was undoubtedly a very great scholar, and even though he was primarily educated as an engineer, is there another writer who has contributed more to architectural history? His present work is in truth a relentless examination of Roman methods of building[1] and if it is hard reading I think we should not blame Mr. Rushforth, who translated it, but rather its author who holds strong views, has great knowledge, and who is Roman to the core. It has been well printed and illustrated and puts one in familiar relation with the last word that research has to offer.

Professor Ricci's work[2] suffered in the translation ,and the reader will note numerous careless slips. Likewise it is hard reading, and again one wonders whether it is necessary to be so dogmatic, or useful to strain so hard at the leash. Romanesque is a new word, even though the style be old, and whether the "Arabo-Byzantine" of Sicily or the Venetian "Byzantine" are properly inclusive under the title Romanesque seems not to be so very very important. There are some very fine illustrations and students of the Roman period and influence will add these works to their library, even though they may join the reviewer in asking the question with which he began to write these words. C. L.

Education

Last year under the auspices of the Committee on Education there was given a special course in the appreciation of the arts at the Art Institute in Chicago. The course was attended by teachers and professors from various colleges and schools and the work was made possible by a grant of $5,000 from the Carnegie Corporation. This year the grant was increased to $10,000 and an extended course was given at the Art Institute to representatives of twenty colleges, under the direction of Mr. Robert B. Harshe, Director, and Mr. Charles Fabens Kelly, assistant to the director of the Art Institute. In addition to the course of instruction provision is made so that the returning teachers shall have available lantern slides, books, lectures and such other data as will enable them to give their own courses in their own respective schools.

§

The Art-in-Trades Club announces its forthcoming exhibition of furnishings and decorations, to occupy twenty-five rooms at the Waldorf-Astoria Hotel, New York City, 28 September—27 October next. The work of the best decorators and craftsmen will be exhibited and the Committee has great hopes that the exhibition will offer many new ideas and exhibit a great advance in the field of interior decoration.

Letters to the Editor

Contract Arbitrations

To the Editor of The Journal:

It has long been realized that the present method of arbitration for disputes in the building business is far from satisfactory.

The selection of three arbitrators usually provides actually one advocate for each party and an umpire who is the choice of the strongest of the advocates. Further, such arbitration is not necessarily final, the losing disputant having the right to carry the matter into court.

The usual court proceedings are not far short of unbearable, due largely to the length of time consumed, often three or four years—with the consequent enormous legal fees—and due to juries composed of twelve men of little intelligence and usually entirely unfamiliar with the customs and technique of the matters to be adjudicated. In New York City there are about 28,000 cases on the calendars, and the courts are able to handle only 6,000 of these each year; the results are obvious.

Fortunately, the states of New York, New Jersey, Massachusetts and Oregon and the Federal Government have recently enacted laws making the findings of a properly constituted arbitration court binding and incapable of appeal. Many other states now have similar laws before their legislatures.

This has made possible the setting up of Arbitration Courts, such as the Court of the American Arbitration Association and the Court of Arbitration of the New York Building Congress. A number of such courts have also been set up by Chambers of Commerce. These courts provide arbitration that requires usually but a few weeks at most, the decimating of lawyers' fees, and a jury of one or three men of the highest standing and thoroughly conversant with the customs of the trade.

Every architect and builder should hail the passage of such laws as a remarkable step forward. Where such laws are already on the statute books in the states named, they should take full advantage of them; where such laws do not exist as yet, they should make determined efforts to bring them about.

In the states of New York, New Jersey, Massachusetts, and Oregon, I would suggest the following clause to take the place of the present general arbitration article:

Article . . . Arbitration.

All disputes arising in connection with this contract shall be submitted to and determined by arbitration as provided

[1] *Roman Architecture and its Principles of Construction Under the Empire.* By G. T. Rivoira. Clarendon Press, 1926.

[2] *Romanesque Architecture in Italy.* By C. Ricci. Heinemann, 1926.

for in the arbitration law of the State of ..... in a Tribunal of Justice known as ..... and in accordance with its rules.

WM. ORR LUDLOW.

Obituary

Rudolph A. Herold

Elected to the Institute in 1916

Died at Sacramento, Calif., 14 April, 1926

Born in San Francisco 25 December, 1870, he was studious in his boyhood days, and at the age of about 19 taught architectural drawing in the Lincoln Evening School of San Francisco. He held this position about five years, while practicing his profession. During the year 1895 he went to Europe, where he worked and studied for three years in most of the important countries of the continent, returning to San Francisco and later moving to Sacramento; he acquired a large practice there and in other parts of Northern California.

Some of the public buildings designed by Mr. Herold were, the Sacramento County Court, City Hall, County Jail and Old High School, Weimer Joint Sanitarium near Colfax, Sacramento County Hospital, Mater Misericordiae Hospital, Providence Hospital of Oakland, School and Friary for the Franciscan Fathers, Forum Building and Masonic Temple, Sacramento; and the Tehama County Jail.

In addition to the High School he did considerable work for the Sacramento Board of Education some years ago.

He always stood unalterably for the high ethics of his profession and was noted for his willingness to assist the members thereof, both old and young. Although very busy, he gave freely and unselfishly of his time and money to the advancement of his profession and the community in which he lived.

During 1917-18, he made an extended tour of the Orient and brought back splendid examples of Oriental art and architecture in form of sketches, data and photographs, a number of which have appeared of late in the JOURNAL.

At the time of his death he was a member of the SAN FRANCISCO CHAPTER, and a director and past president of the Sacramento Architects and Engineers Club, and a member of the Sacramento Lodge of Elks, Tehama Lodge of Masons and the Sutter Club.

The following relatives survive: P. J. Herold, also an Architect, who has succeeded his late brother in the practice of the profession under the name of R. A. Herold Co.; another brother and a sister.

ALBERT M. EVERS.

August C. Esenwein

Elected to the Institute in 1910; to Fellowship in 1926

Died at Buffalo, New York, 29 June, 1926

August Carl Esenwein was born at Esenwein-Virnsberg, near Weinsburg, Wurtemburg, 7 November, 1856. Educated at private schools he prepared for the University of Stutgart, and in 1874 entered the Stutgart Polytechnic University from which he was graduated five years later. He served for a year in the army and then went to Paris where he worked for two years in an architect's office. Mr. Esenwein came to Buffalo in 1880, worked for a time in the office of an architect, was employed in the engineering department of the Lackawanna Railroad, and won the competition for the music hall which was built under his supervision.

He later formed a partnership with John Addison Johnston with whom he was associated up to his death. His important work includes the Buffalo Public Library, Museum of Natural Science, Gowanda State Hospital, the old Iroquois Hotel, the old Statler Hotel, The Tower Hotel at Niagara Falls, the Gluck office building, the German-American Brewery and Hall. In association with his partner he designed the Lafayette High School, the Masten Park High School, The General Electric Building, Providence Retreat, Touraine Hotel, and numerous other well known edifices in and about Buffalo.

He was a member of the Buffalo Society of Artists, Historical Society, Y. M. C. A., Turn Verein, the Buffalo Orpheus, Buffalo, Ellicott Park and Country Clubs. He is survived by an only son.

E. Hill Turnock

Elected to the Institute in 1915; to Fellowship in 1926

Died at Fort Wayne, Indiana, 8 July, 1926

Mr. Turnock was born in England and came to Indiana as a child some fifty-five years ago. After spending some years in Chicago he returned to Elkhart where he enjoyed a large practice. He was commissioned to design most of the public and semi-public buildings in that city. He is survived by two sons and three daughters.

Institute Business

TO THE MEMBERS OF THE INSTITUTE:

The names of the following applicants may come before the Board of Directors or its Executive Committee for action on their admission to the Institute and, if elected, the applicants will be assigned to the Chapters indicated:

BALTIMORE: Oliver B. Wight.

BOSTON: Mary Almy, John Woodbridge Beal, James Lawrence Berry, Charles H. Ely, Andrew H. Hepburn, Timothy G. O'Connell, Richard J. Shaw, Frederic B. Stearns.

BROOKLYN: E. James Gambaro.

CENTRAL NEW YORK: Charles A. Carpenter, Paul Hueber.

CHICAGO: Joseph H. Bristle, Zachery T. Davis, Raymond W. Flynn, George Palmer Graves, John Ogden Merrill, Fred O. Rippel, Leon F. Urbain.

CLEVELAND: Alfred Karl Murawsky, George P. Walsh, Karl E. Wilhelm.

DETROIT: Robert Benjamin Frantz.

FLORIDA: T. Miller Bryan, L. Phillips Clarke.

INDIANA: Arthur Bohn.

IOWA: Allan O. Greasby.

KENTUCKY: Clifford F. Reichert.

MINNESOTA: Gilbert R. Horton, Cecil Odlin, Joseph A. Shannon.

NEBRASKA: Kenneth H. Gedney, Horace S. Seymour.

NEW YORK: Wallace K. Harrison, Louis E. Jallade, Emil Broschart, Meyer.

NORTH TEXAS: David Reichard Williams.

PITTSBURGH: Frederick Giffin, George M. Rowland.

RHODE ISLAND: William G. Richards.

SAN FRANCISCO: Chester Cole, James Somerville Dean.

SOUTHERN CALIFORNIA: Alfred F. Priest.
TENNESSEE: William A. Rutherford, Jr.
VIRGINIA: H. M. Miller, Matthews H. Tardy.
WASHINGTON STATE: David Christopher Lange, G. Albin Pehrson, Frederick James Peters.
WEST VIRGINIA: Carleton C. Wood.
WISCONSIN: Roy Oliver Papenthien.

You are invited, as directed in the By-Laws, to send privileged communications before August 31, 1926, on the eligibility of the candidates, for information and guidance of the Members of the Board of Directors in their final ballot. No applicant will be finally passed upon should any Chapter request within the thirty day period an extension of time for purpose of investigation

FRANK C. BALDWIN, *Secretary.*

Meetings of the Board of Directors, May 1, 3, 4, 1926

MEMBERS PRESENT

The meeting was called to order by the President, D. Everett Waid, at 9:35 A. M., May 1, 1926, in the drawing room of the Octagon House, Washington, D. C. Others present were the First Vice-President, Abram Garfield; the Second Vice-President, William L. Steele; the Acting Secretary, C. C. Zantzinger; and the Treasurer, William B. Ittner; and Directors C. Herrick Hammond, William J. Sayward, Edwin Bergstrom, Nat Gaillard Walker, Goldwin Goldsmith and J. Monroe Hewlett; also the Executive Secretary, E. C. Kemper. Director F. Ellis Jackson arrived on Monday, May 3.

ALLIED ARCHITECTS' ASSOCIATIONS

The President reported that in accordance with the agreement at the December meeting of the Board of Directors, and a subsequent referendum vote, a letter was addressed to the Institute membership on the subject of Allied Architects' Associations, in which were set forth the views of the Board on the principles involved. In the letter which appeared in the February, 1926, issue of the JOURNAL, the position of the Board was stated in the form of a resolution.

After extended discussion the Secretary was requested to incorporate in the Board's report a modification of that resolution. The modification as adopted, and as appearing in the Board's report to the Convention, read as follows:

"*Resolved,* That while circumstances may arise which render it expedient to form an Allied Architects' Association in the public service and for specific work, nonetheless the Board believes that the formation of such associations is not in the best interests of the art of architecture, and therefore the definite establishment of an association, bringing together a large percentage of the practitioners of a given section for the general practice of architecture, is to be discouraged."

[1] Many matters concerning the Convention, Reports of Committee, and similar details are omitted from these minutes, since they have largely been covered in the Convention report in the JOURNAL for June.

SCIENTIFIC RESEARCH DEPARTMENT—SPECIAL COMMITTEE APPOINTED

Sidewalk, Floor and Roof Lights—Simplified Practice Recommendation

A letter of March 18 was read from the Secretary of the Scientific Research Department, transmitting a copy of the recommendations of the Division of Simplified Practice of the Department of Commerce on "Sidewalk, Floor and Roof Lights." The Institute was represented at the conference on this matter, and its representative recommended that official approval be given the recommendation. Approval was also recommended by the Advisory Council of the Producers' Research Council, and by the Director of the Scientific Research Department. On motion, it was

Resolved, That Simplified Practice Recommendation, Sidewalk, Floor and Roof Lights, as proposed by the Department of Commerce, be approved by the Institute.

THE ROOSEVELT MEMORIAL SITE

A letter of April 21 was read from the Secretary of the NEW JERSEY CHAPTER, which, with its enclosures, referred to the proposed site of the Roosevelt Memorial in Washington, D. C., on the south axis of the White House. The Chapter wished some guidance from the Board before taking action on this matter of national importance. The Acting Secretary also read Mr. Medary's confidential letter of April 26, and the following action was taken: The President outlined the history of this matter as it appears in the Minutes of the December meeting of the Board of Directors. On motion, it was

Resolved, That the NEW JERSEY CHAPTER be requested to take no action with regard to the proposed Roosevelt Memorial site, on the assurance that any action required will be taken by the officers on behalf of the Institute and the profession as a whole.

CUBING SYSTEM FOR BUILDINGS

At the March meeting of the Executive Committee it was directed that the Scientific Research Department be requested to discontinue its work on developing a cubing system for buildings. The President was requested to submit to the Board of Directors, at the May meeting, a cubing system which he has found practical over a long period of time for use throughout the United States. The document, entitled "Cubic Contents of Buildings—Standard Method of Calculation and Form of Statement," was then read.

Mr. Boyd's letter of April 29 was read, in which he pointed out the large amount of work which had been done by the sub-committee of which he is Chairman, as appointed by the Advisory Council of the Scientific Research Department. He expressed disappointment at the summary action taken by the Institute Executive Committee and the hope that the material in hand could be used by the Institute rather than turned over to other organizations. On motion, it was

Resolved, That the document submitted by Mr. Waid be approved and issued as an Institute Document as a

first edition. It is also referred to the Scientific Research Department with notice of its adoption, and the statement that the Board would be glad to have any recommendations for improvement.

Building Exits Code—Progress Report

The Acting Secretary reported that the Chairman of the Committee on School Building Standards, C. B. J. Snyder, acting under instructions of the Board of Directors, has conferred with the Building Exits Code Committee and has reduced to writing certain proposed revisions of the Code which, if adopted, will permit approval by the Institute Committee. This report was one of progress, as a final report will be made when an agreement has been reached.

Proposed Fire Prevention and Fire Waste Congress

The President reported that Secretary Hoover, of the Department of Commerce, may call a National Fire Prevention and Fire Waste Congress, to be held in Washington during Fire Prevention Week in October. On motion, it was

Resolved, That the holding of such a meeting be commended, and that it be recommended to the incoming Board of Directors that Institute representatives be appointed.

Architectural Index Requested

A letter was presented from Richard S. Gregg, Institute member, suggesting that an architectural index be conducted by the Institute, similar in nature and scope to engineering index issued by the American Society of Mechanical Engineers. On motion, it was

Resolved, That the report be referred to the Scientific Research Department with power.

Biographical Material in the Journal

At the instance of the Editor of the Journal attention was called to a request from the Oregon Chapter —that the Journal prepare and publish biographical material relating to Honorary and Honorary Corresponding members of the Institute. As this procedure involves considerations of policy Mr. Whitaker said that he would be glad to have the instructions of the Board. On motion, it was

Resolved, That the Secretary be requested to advise the Press, and the Oregon Chapter, that owing to the substantial cost of doing such work properly an appropriation cannot be made for it at this time.

Biographical Questionnaire to Institute Members

There was discussion of the proposal to send out a biographical questionnaire to all members of the Institute, and methods for maintaining the returns in proper and adequate form. It was pointed out by the Executive Secretary that to secure the returns of such a questionnaire from a large percentage of Institute members, say, 85 per cent. or 90 per cent., and to keep the record current, year by year, would involve extensive correspondence. The present staff at the Octagon House, which, in addition to the general work of headquarters, performs extensive clerical work for various Committees of the Institute, is not large enough to absorb and properly carry on the work involved in securing and maintaining, in good form, the proposed biographical record. The situation could be met by an adequate appropriation in the 1926 Budget, from which the salary of a qualified clerk could be paid.

No action was taken.

Exhibition House Property Fund—Sale of Securities

On the recommendation of the President and the Treasurer, the following resolution was adopted:

Resolved, That the Treasurer be authorized to sell the securities of the $5,000 invested for the Exhibition House Property Fund, in order that all or part of this amount may become available for expenditure under the terms of the anonymous gift of $5,000, as stated in the terms of the gift. (See page 7 of the December Minutes.)

With further reference to the Exhibition House Property Fund, the Treasurer called attention to the desirability of correcting the 1926 Budget to read as follows:

Under the Expenditure column for 1926: "Execution of purpose of anonymous gift of $5,000" change $250.00 to read $5,250.

Membership Conditions

The Acting Secretary reported that under the resolution adopted at the December meeting of the Board of Directors a letter was addressed by the President and the Acting Secretary to the President of each Chapter of the Institute, with regard to membership conditions. A signed copy was sent to each Chapter Secretary. This letter was accompanied by a confidential statement which set forth the growth, or lack of growth, of each Chapter from October 1, 1923, to October 15, 1925. The letter to Chapters also transmitted a list of the unaffiliated architects in the territory of the Chapter. It appeared that during the year, which ended October 15, 1925, twenty-three Chapters sustained net losses in membership, ranging from 2 to 19 per cent. The percentage of growth for the entire Institute during the period was 2 per cent. The net gain in membership for the Convention year ending in April, 1926, was 46 members.

Generally speaking, the response of Chapter Officers has been cordial, and most of the Chapters are now investigating local conditions with a view to reaching the unaffiliated men who are worthy.

The report was accepted.

Registration Laws—Proposed By-law Amendment

The Acting Secretary called special attention to the proposed amendments to the By-laws which impose the requirement of registration or license upon the applicant for Institute membership, or upon the member desiring to transfer from one Chapter to another. The amendments were distributed to the membership in the circular of April 5. The report of the Chairman of the Committee on Registration Laws, William P. Bannister, was read.

With reference to making registration or license a con-

dition precedent to membership, a letter of April 1 was submitted from the Secretary of the PITTSBURGH CHAPTER concerning draughtsmen who are considered eligible for Institute membership, though not registered in the State of Pennsylvania, because they are not in independent practice.

Director Hammond read the resolution of the Convention Action Committee of the CHICAGO CHAPTER, which was against incorporating the requirement into the By-laws. After discussion, on motion, it was

Resolved, That the Board reconsider its endorsement of this proposal and advise against its adoption, for reasons set forth in the Board's report under "Registration Laws."

As relevant, the Acting Secretary spoke of the need for developing methods for the enforcement of registration and license laws in the various States. The subject has received special attention in the PHILADELPHIA CHAPTER where a number of violations have been discovered. It is found that there is no constituted authority under the State government, whose business it is to bring complaint with regard to violations—which duty, therefore, devolves upon the citizens interested. As a result, steps are seldom taken to bring offenders to justice, and there is need for an Institute Committee or Chapter Committee to function in this particular.

No action was taken in this regard.

REGIONAL DIRECTORS—REPORTS ON VISITS

The following Regional Directors reported visits to their Chapters, subsequent to the visits reported at the December meeting of the Board:

C. Herrick Hammond—has visited all of his Chapters—thirteen in number.

Nat G. Walker—has visited NORTH CAROLINA, SOUTH CAROLINA and VIRGINIA. He is planning to visit BALTIMORE, WASHINGTON and WEST VIRGINIA.

Goldwin Goldsmith—has visited all of his Chapters.

F. Ellis Jackson—has visited all of his Chapters.

J. Monroe Hewlett—has visited all of his Chapters.

FELLOWS ELECTED

Past President Henry H. Kendall, Chairman of the Jury of Fellows, submitted to the Board of Directors the recommendations of the Jury—for the election of Fellows for the year 1926.

After consideration the Board elected certain members to be Fellows of the American Institute of Architects, and the Acting Secretary was requested to report their names to the Fifty-ninth Convention. The list appeared in the JOURNAL for June.

JURY OF FELLOWS—REVISION OF RULES

A letter of April 8 was presented from the Chairman of the Jury of Fellows in which he recommended that the Rules of Procedure of the Jury, as approved by referendum vote of the Board of Directors in January, 1926, be amended as follows:

Strike out paragraphs 5 and 6, beginning "As suggestions for advancement" and ending "List of candidates." Change paragraph 7 to read as follows: "A complete list of suggestions, made as prescribed herein, shall be mailed annually to each Member and Fellow of the Institute, with a request for privileged communications." On motion, it was

Resolved, That the amendments be approved.

CONTRACTS—SPECIAL MATTERS—REPORT OF COMMITTEE

The following matters from the Committee on Contracts, Thomas E. Snook, Chairman, were submitted:

Owner-Architect Agreement-Percentage Basis

The report of the Committee, under date of December 4, 1925, was read; and accompanying revised draft of the Contract Form. On motion, it was

Resolved, That the revised contract between Owner and Architect, on the Percentage Basis, be approved in principle, subject to such minor modifications as may be agreed upon by the President and the Chairman of the Committee on Contracts. The document should be issued then as the Third Edition.

Form of Architect's Proposal

It has appeared from correspondence that some architects are in favor of a letter, in the form of an Architect's Proposal, for use in small work in lieu of the form of agreement between Owner and Architect. The Chairman's letter to members of his Committee, Mr. Parker's letter of March 2, and a proposed form were submitted. On motion, it was

Resolved, That the proposed form be referred to the Committee for further study. The Board was inclined to accept the views expressed in Mr. Parker's letter, but did not definitely reject the proposal.

Coöperation with the International Association of Master Painters

The Committee reported that the Chairman and two other delegates, Messrs. Paul A. Davis, III, and John P. B. Sinkler, represented the Institute at the Convention of the International Association of Master House Painters and Decorators of the United States. The Committee was received with the utmost courtesy. It is of the opinion that the coöperation of the Institute was appreciated, and will be of mutual benefit. On motion, it was

Resolved, That the report be accepted.

Reprinting of Standard Documents in Foreign Countries

A request has been received from a French publication for permission to reprint in France the Agreement and General Conditions of the Fourth Edition of the Standard Documents. The Committee saw no objection to granting this permission, subject to the approval of the Board and under the usual restrictions.

As a general recommendation, the Committee proposed that the Fourth Edition of the Standard Documents be copyrighted in the British Empire, France and perhaps other foreign countries, inasmuch as very valuable publication rights might be thus secured in the English-speaking and other countries. Also, the proper control of the use of the Institute documents would be retained by the American Institute of Architects. On motion, it was

Resolved, That the Committee on Contracts be authorized to give permission for the publication of the Standard Documents, Fourth Edition, in foreign countries under the same restrictions as are now imposed in the United States, and that the Committee be authorized to consult Institute Counsel as to the recognition of present copyright privileges in foreign countries, and with regard to the general desirability of copyrighting the forms in foreign countries.

BOARD FOR JURISDICTIONAL AWARDS—REPORT OF SPECIAL COMMITTEE

The President referred to the work of the Board for Jurisdictional Awards and the proposed withdrawal of support by the American Engineering Council. In accordance with action of the Board of Directors of the Institute at the December meeting, a special committee was appointed to meet with the engineers, in Pittsburgh, on May 3, 1926. This committee consisted of Messrs. E. J. Russell, Edward B. Lee and Gustave Drach.

Mr. Lee met with the Board of Directors and presented a written report on behalf of the special committee. In substance it recommended as follows: That the Institute and Engineering Council continue to support the work of the Jurisdictional Board; that a joint committee of the two organizations confer with the President of the American Federation of Labor, advising him that it is the sense of the architects and engineers that steps should be taken to bring about a reaffiliation of the carpenters' union with the Building Trades Department, which would regain the support of the carpenters of the decisions of the Jurisdictional Board; that the Jurisdictional Board have a paid secretary; that evidence presented at hearings be recorded; that the Board have headquarters where the records and work may be available to all interests involved; and that the expenses be borne by those interested on a joint basis.

The report concluded with the request that the Institute formally address a letter to American Engineering Council setting forth its belief in the Board for Jurisdictional Awards and expressing its desire to have the continued coöperation of the engineers in carrying on the work. On motion, it was

Resolved, That the Board express its appreciation of Mr. Lee's work.

Resolved, That the Secretary be requested to prepare a letter to be forwarded to American Engineering Council, approving the recommendations of the joint committee as set forth in the report.

In his letter, the Secretary should emphasize the Board's realization of the importance of this particular work as tending to increase the prestige of the architect and the architect's decisions in the minds of union labor.

Director Bergstrom voted in the negative on these resolutions.

INDUSTRIAL MOBILIZATION—COÖPERATION WITH THE WAR DEPARTMENT

The President read a letter from Hon. Dwight F. Davis, Secretary of War, addressed to the Institute and asking that coöperation be extended to the Quartermaster General in securing adequate plans and specifications for carrying out the provisions of the Army Housing Bill recently enacted by Congress. This gratifying recognition of the profession was properly acknowledged by the President. He appointed Past-President John Lawrence Mauran to act for the Institute.

The report was accepted.

AMERICAN ARBITRATION ASSOCIATION

Correspondence was presented from the American Arbitration Association, seeking the affiliation of the Institute. The support of the Institute was sought in a movement to make commercial arbitration a recognized United States policy throughout the world. On motion, it was

Resolved, That the invitation be declined, inasmuch as the subject matter of the program is somewhat beyond the sphere of the Institute.

ADJOURNMENT. The meeting adjourned at 5 P.M.

Meeting of the Board of Directors, May 8, 1926

MEMBERS PRESENT. The meeting was called to order by the President, Milton B. Medary, Jr., at the Octagon, Washington, D. C., at 9:45 A.M. on May 8, 1926. Others present were the Second Vice-President, C. Herrick Hammond; the Secretary, Frank C. Baldwin; the Treasurer, Edwin Bergstrom; and Directors William J. Sayward, Nat G. Walker, Goldwin Goldsmith, J. Monroe Hewlett, F. Ellis Jackson, Paul A. Davis, III, and D. J. V. Snyder; also the Executive Secretary, E. C. Kemper.

EXECUTIVE COMMITTEE (1) ELECTIVE.[1] The election of an Executive Committee was considered. The President and Secretary are members *ex officio.*

Resolved, That the President be empowered to cast the vote of the Board for the members of the Executive Committee.

Powers Delegated. With reference to the powers of the Executive Committee, it was

Resolved, That the Board of Directors delegates to the Executive Committee the power to exercise the functions of the Board, with the exception of any general powers involving the discipline of members. These powers delegated to the Executive Committee are effective during intervals of Board meetings in 1926, and until the adjournment of the Convention of 1927. The Executive Committee is authorized to supplement the instructions to any of the Standing or Special Committees as circumstances may require.

Director Sayward spoke in favor of sending to all Directors advance notices of important matters which are to come before the Executive Committee so Directors may have an opportunity to express their opinions if they wish. Such notices should state what matters are coming up, and announce the time and place of the Executive Committee meeting. Inquiry was made as to the status of Board members at Executive Committee meetings. It was the sense of the meeting that such

[1] The personnel of the Executive Committee is as follows: Milton B. Medary, Jr., William Emerson, C. Herrick Hammond, Frank C. Baldwin, and J. Monroe Hewlett.

members are privileged to attend, but do not have a vote.

BOARD OF EXAMINERS (2) ELECTIVE. A Board of Examiners was elected as follows:

Victor Mindeleff .....*Washington, D.C.*
Frederick Vernon Murphy .....*Washington, D. C.*
Edward W. Donn, Jr., *Chairman*..*Washington, D. C.*

JUDICIARY (4) ELECTIVE. The following were elected to serve on the Judiciary Committee:

Paul A. Davis, III .....*Philadelphia*
D. J. V. Snyder .....*Detroit*
William J. Sayward, *Chairman*.....*Atlanta*

COMMITTEE APPOINTMENTS—PRINTING OF ANNUARY. It was suggested, in order to issue the Annuary promptly, and to give the President time to consider personnels of the appointive Committees, that the Committee appointments be made by the President at his convenience. The Annuary should be issued with a place provided for the insertion of a Committee personnel supplement, in the same manner as in 1924; or it may be held until the appointments are completed by the President—as the President may decide.

Resolved, That the Annuary be issued with the Committee personnels, or with the space for a supplement, as decided upon by the President; and that the existing Committees be continued on duty until new appointments are made by the President.

GENERAL INSTRUCTIONS TO COMMITTEES. For the guidance of all Standing and Special Committees, and to take effect as of May 8, 1926, it was

Resolved, That the general instructions to all Standing and Special Committees for 1926-1927 be as follows: To observe and carry out the instructions of the Fifty-ninth Convention, if any; to continue the general programs of Committee work as now established, unless or until the same are modified by subsequent instructions from the Board; to carry out in connection with any Convention instructions, any specific instructions of the Board of Directors, as the same may be issued from time to time; to make progress reports to the Board of Directors not later than November 1, 1926; and to observe strictly the appropriations allowed in the Budget of 1926.

SCIENTIFIC RESEARCH DEPARTMENT AND RELATED MATTERS. There was discussion of the work of the Special Committee appointed at the pre-Convention Board meeting, and its report to the Convention, which was adopted as a Convention Resolution. (See Proceedings and JOURNAL for June for resolution).

Resolved, That the Special Committee appointed under the chairmanship of Director Walker be asked to continue. It is directed to present to the Board a further report as soon as possible with the hope that that report may form the basis of action at the coming meeting of the Executive Committee. The Committee is directed to make a study of the entire problem in order that full information may be available. It is understood that in the interim the present set-ups of the various activities shall continue as is, and that no change in these set-ups will be made except by the full Board of Directors.

BOARD AND EXECUTIVE COMMITTEE MEETINGS—SCHEDULE. In connection with the publication of the Annuary the President referred to the desirability of including therein a schedule of Board and Executive Committee meetings for the ensuing year. A map showing the times and places of meetings of the Executive Committee and Board of Directors during the past five years was exhibited.

The Convention letter of the Delegates of the four Pacific Coast Chapters was read. It commended the visit of the Board of Directors to the western states in the fall of 1925, and endorsed the value of these meetings in bringing about a better understanding of the problems of the Chapters and the Institute.

There was read also a letter of April 29, from the NORTH TEXAS CHAPTER, which invited the Board of Directors to visit Dallas or some city in Texas during the current year. The Secretary was requested to acknowledge the letter with thanks, to refer to the meeting in Dallas in 1924, and to explain the desirability of meeting with the FLORIDA CHAPTER in the fall of 1926.

After discussion the following decisions were reached, by resolutions formally adopted:

Executive Committee—summer meeting—exact time and place left with President, on the understanding that the meeting will be held in New England, in conjunction with any regional conference that may be arranged by the Regional Director.

Board of Directors—fall meeting—to be held in Washington on December 3, for the purpose of a joint meeting with the Jury of Fellows. Subsequent meetings of the Board will be held with Chapters in South Carolina, Georgia, and Florida, on a schedule to be arranged through the Regional Director, and terminating with a final meeting in Atlanta near the middle of December.

Executive Committee—spring meeting—to be held in New York early in March.

Board of Directors—Convention meetings—to be held in Washington on May 2, 3, and 7, 1927.

TIME AND PLACE OF THE SIXTIETH CONVENTION. Consideration was given to the time and place at which the Sixtieth Convention should be held. The Secretary stated that the work of the Secretary's Office and of all of the Standing and Special Committees can be coördinated better if the date and place of the next Convention are determined well in advance.

A letter of April 29 was read from the Architectural League of New York. It requested the Board of Directors so to arrange the dates of the next Convention of the Institute as to permit the delegates to attend the New York meetings and Exhibition of the Architectural League, which is to be held in New York on February 21—March 5, 1927.

In connection with the time and place of the Convention Mr. Rosenheim's letter of January 25 was read. The Secretary was requested to advise him that weather conditions in Washington, and previous experience, make it unwise to fix the date of the Convention as late as June.

It was the sense of the meeting that the next Convention should be held in Washington, in view of the proposed development of the Octagon property. To be of such assistance to the Architectural League as was within the power of the Board it was directed that a suggestion be sent to the Second Regional District—that it hold a Regional conference in conjunction with the New

York meetings, with an attractive program which might bring many Institute members to New York. It was also directed that the spring meeting of the Executive Committee be held in New York at the time of the League meetings. These things it is hoped will partly serve the purpose of the League, and will comply as near as circumstances will permit with the suggestion of the League as set forth in its letter of April 29.

Resolved, That the Sixtieth Convention be held in Washington on May 4, 5, and 6, 1927.

THE ARCHITECTS' SMALL HOUSE SERVICE BUREAU. A letter of May 7 was read from Robert D. Kohn in which he made the following suggestions:

That the Board of Directors seriously consider the responsibility of close contact with the work of the Small House Service Bureau; that it carefully consider the attitude of the Institute towards other "small house services," and towards building industry competitions in the interests of specific materials—as set forth in the Convention paper of Arthur Holden; and that the so-called control of the Bureau by the Institute be of such a nature as not to choke off the excellent initiative shown by the Bureau and its various branches. After discussion, it was

Resolved, That Vice-President Hammond be requested to represent the Board of Directors of the Institute at all meetings of the Board of Directors of the Small House Service Bureau.

This action shall be conveyed to the Bureau, with the suggestion that it arrange to pay the expenses of Mr. Hammond in attending meetings.

TRAVELING SCHOLARSHIP. A letter of May 7 was read from Julian Clarence Levi, with attached document stating the terms for a traveling scholarship, for the purpose of permitting young French architects to study architecture and construction methods in the United States. In his letter Mr. Levi requested the official approval of the Board of Directors, and the appointment of a committee. He also pledged the $1,500 named in the terms for the three years of the experimental carrying on of the scholarship. Attached to the terms was a list of interested Institute members representing practically all of the large Chapters of the Institute.

Resolved, That the matter be referred to the Committee on Education for an immediate report. The President, Secretary, and Director Hewlett are to receive this report, and they are empowered to act upon it for the Institute and without further reference to the Board.

INTERNATIONAL FEDERATION OF TOWN AND COUNTRY PLANNING AND GARDEN CITIES. A letter of May 7 was read from Henry Wright, Chairman of the Committee on Community Planning. He recommended that the Institute become an association member of the International Federation of Town and Country Planning and Garden Cities; and that it send a delegate whenever possible to the annual conferences of the Federation.

Resolved, That Mr. Wright's request be granted and that he be authorized to represent the Institute at the meeting of the Federation to be held in Vienna, in September, 1926.

INTERNATIONAL CONGRESS OF ARCHITECTS. There was discussion of the International Congress of Architects and the matter of Institute representation thereat.

Resolved, That the President be authorized to appoint a delegate to the International Congress of Architects if a request for such an appointment is received, on the understanding that there will be no expense to the Institute.

CHAPTER TAXES AND REFUNDS. It was explained by the Assistant Treasurer that after each Convention there should be some readjustment of the schedule of Chapter taxes and refunds, and that after the refunds have been paid there is usually a small balance, which heretofore has been distributed pro rata among the Chapters.

Resolved, That the Treasurer be authorized to make the necessary readjustment in the schedule of Chapter refunds, to make the refunds, and also to pro rate any balance that may be remaining.

CHAPTER BY-LAW AMENDMENTS—POWER OF APPROVAL. It has been customary for the Board of Directors to delegate to the Secretary the power to approve amendments to Constitution and By-laws of Chapters when same are in conformity with the principles of the Standard Form of Constitution and By-laws for Chapters issued by the Institute.

Resolved, That the Secretary be empowered by the Board of Directors to approve in its name amendments to or changes in the Constitution and By-lays of a Chapter when such amendments or changes are in accord in principle with the requirements of the Standard Form of Constitution and By-laws for Chapters.

The meeting adjourned at 5:50 P. M.

Structural Service Department

LEROY E. KERN. *Technical Secretary*

In connection with the work of the Committee on Structural Service of the American Institute of Architects and in collaboration with other professional societies and organized bodies having the same objective—improvement in building materials and methods and better shelter for humanity in all its manifold vocations and avocations

Abstracts

Effect on Marble of Soluble Salts in Cleaning Materials (8e3). (*Technical News Bulletin No. 108 of the National Board of Standards.*) It has long been recognized that solutions of various salts when allowed to penetrate the pores of stone, brick, or similar materials are apt to cause trouble because of recrystallization and internal pressure thus developed. The most common example of this is when the soluble matter is leached out of masonry walls forming an efflorescence on the surface and usually a considerable amount of decay due to some of the salts crystallizing within the pores near the surface.

The possibility of a similar action, due to sodium carbonate or tri-sodium phosphate in cleaning materials when interior marble work is scrubbed with such preparations, has recently been under consideration. Occasionally a costly marble installation which is frequently cleaned has been found to show signs of decay in such a way as to indicate that the trouble has been caused by penetration of salts. Practically all of the trade cleaning preparations used for this purpose contain one of the above-mentioned salts.

The bureau is coöperating with the National Association of Marble Dealers in a study of this question, and the results to date indicate that such action does take place under ordinary cleaning conditions. The method of studying this problem consists mainly of a long-period scrubbing test in which numerous marble slabs are submitted to 120 scrubbings with the cleaning preparation under consideration. Between successive scrubbings the marble specimens are allowed to dry in order to induce crystallization of any salts which may have penetrated during the scrubbing. After the scrubbing with a certain cleaning preparation has been completed the marble slabs are tested transversely for flexural strength, elasticity, and yield point. These properties are then compared with the same determinations made on slabs of the marble in the original condition; that is, without scrubbing.

One test with a tri-sodium phosphate composition has indicated a loss of strength of 10%, a lowering of the elastic modulus of 14%, and a reduction of the yield point of 14%. Since each scrubbing is somewhat more prolonged in the test than is usually the case in actual scrubbing it is hardly fair to infer that this action takes place at the same rate under service conditions; however, it is believed that marble work which is cleaned every day would be affected to the same extent in one year, and that signs of decay would be observed in 10 or 20 years.

The research work has been limited to determining the effect of such action on marble. However, the same action evidently takes place on other floor and wall materials, such as concrete, terrazzo, slate, etc., and therefore the experiments are of general interest. Because of the low absorption of marble it seems likely that it would probably be less affected in this way than many of the other materials.

Use of Hydrated Lime in Portland Cement Mortar. (313). (*Technical News Bulletin No. 92 of the Bureau of Standards.*) It is quite common practice to add hydrated lime to Portland cement mortar, to improve its working qualities, while on the other hand, Portland cement is added to lime mortar to hasten its set and increase its strength. The qualities of each material vary with the locality and the opinion of the user. Obviously there is a mix best adapted for given conditions. The determination of these mixes has been the subject of many investigations covering a number of years. An investigation has been completed at the Bureau dealing with the measurement of plasticity, time of set, yield, shrinkage, and tensile strength, together with a résumé of the literature upon these subjects. Many interesting points have been brought out including:

1. The richer the cement mortars, and the higher the percentages of lime which they contain, the more mixing water is required to bring them to a given consistency.

2. A cement mortar to which lime has been added requires additional water, but this additional water increases shrinkage possibilities; therefore lime should be limited in cement mortars where it is desirable to keep the shrinkage low. The principal advantages of the lime are that it increases workability, tends to prevent segregation any may reduce permeability if used in the proper proportion. Lime retards the set of cement mortars.

3. The substitution of lime for an equal volume of cement always results in a decrease in strength. The substitution of lime for an equal weight of cement can not be expected to increase the strength of a cement mortar which is richer than 1:4.

4. The desirable properties of cement-gaged lime mortar are short time of set, strength, elasticity and workability.

A study of the literature indicates that: Inert, powdered admixtures possess positive merit for reducing permeability of mortars to water when applied to mortars that are not too rich; the strongest mortars may not always have the greatest adhesions; extra sand reduces adhesion of mortars; the strength of masonry depends upon the strength of bricks, mortar, and bond between mortar and brick.

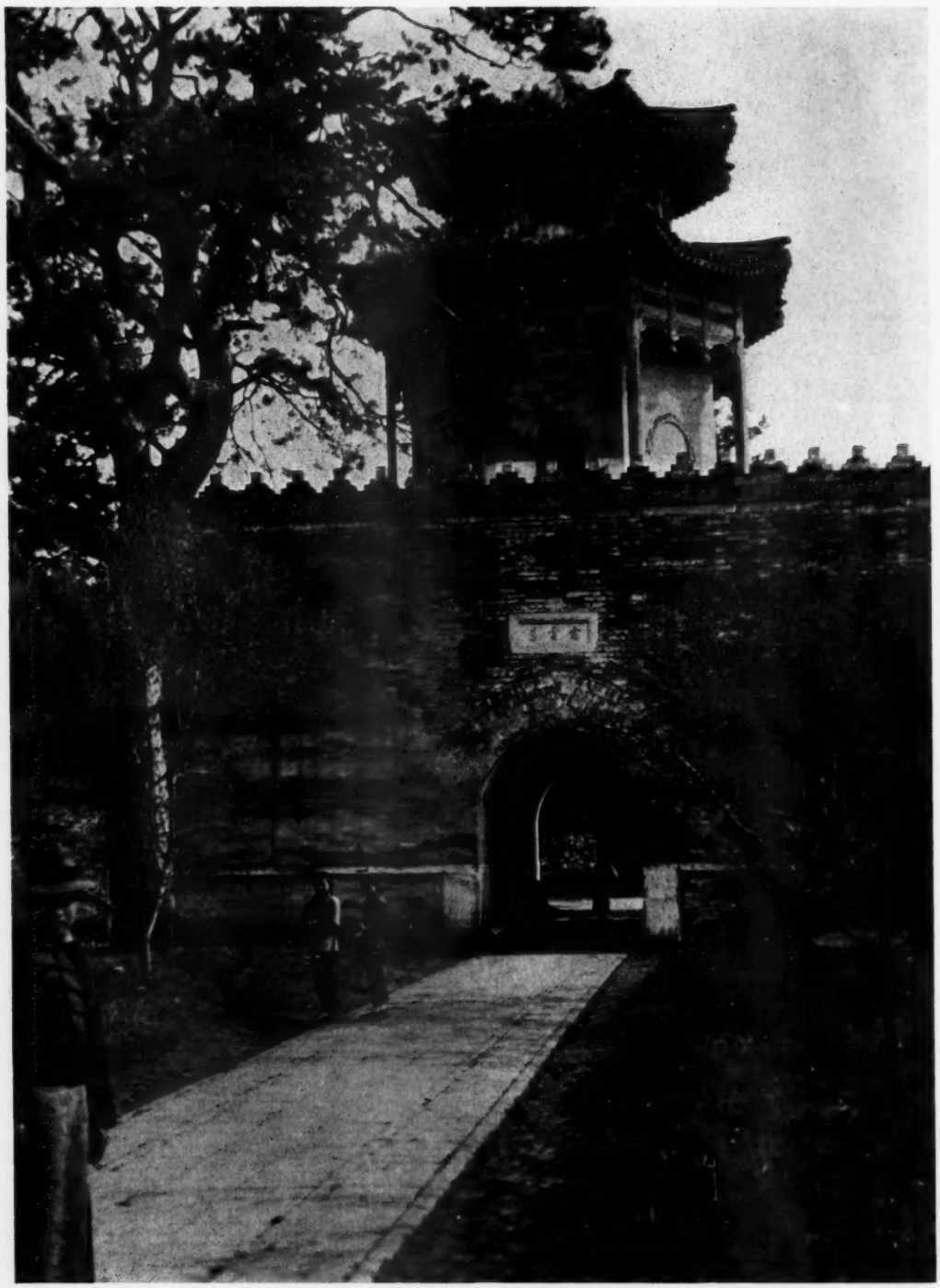
Lead Pans for Shower Baths. (29h3). (*Technical News Bulletin No. 92 of the Bureau of Standards.*) Limited tests show that corrosion of lead occurred in contact with the mortar and that the addition of the sodium silicate to the mortar did not make a marked difference in results.

In view of the wide use of sheet lead in shower bath installation and from the above test results the Bureau makes the following suggestions in order to obtain satisfactory installations: That not lighter than six-pound lead be used and that the sides be turned up at least two inches above the floor level. The corners should be turned up and not soldered. The concrete base upon which the lead pan is laid should have a smooth finish and be given a coating of bituminous paint before the pan is set. The top of the pan should have a similar coat before the topping is laid. The topping used above the pan should be a 1:3 cement sand mortar and during the laying of this care should be taken to protect the weep holes in the trap by some means as placing a layer of gravel about ⅜ inch size around the trap for a considerable area.

Paints Resistant to Sulphide Fumes. (25b2). (*Technical News Bulletin No. 92 of the Bureau of Standards.*) Ammonium sulphide is more detrimental to the color of paints than hydrogen sulphide, owing to the action of both the hydrogen sulphide and ammonia fumes.

For the interior painting of chemical laboratories and other places subjected to sulphide fumes, flat linopone wall paints of the type specified in U. S. Gov't Specification No. 21 are recommended. If white is desired as the color, the paint should be free from lead. The use of a cobalt drier is recommended. For gloss finishes a lithopone paint of the type specified in U. S. Gov't Specification No. 67 is recommended; the same provisions for the absence of lead in the paint, either in white or tints, hold true. Ammonia fumes, however, will be more detrimental to the color of these gloss finishes than to the flat finishes.

For exterior painting around places subjected to sulphide fumes, the use of a titanium pigment-zinc oxide paint free from lead is recommended.



THE SUMMER PALACE, PEKING
ENTRANCE GATE AND TOWER
Photograph by Rudolph Herold